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Repair Manual
Audi A5 Coupé 2008 ➤ , Audi Q5 2008 ➤ ,
Audi A5 Cabriolet 2009 ➤ ,
Audi A5 Sportback 2010 ➤,
Audi A8 2010 ➤ , Audi A1 2011 ➤ ,
Audi A7 Sportback 2011 >
Audi A6 2011 ➤ , Audi Q3 2012 ➤ ,
Audi A3 2013 ➤ ,
Audi A3 Sportback 2013 ➤ .
Audi A6 China 2012 ➤ .
Audi Q3 China 2013 ➤
Audi Q5 China 2010 ➤
Audi A3 Limousine 2014 ➤ .
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Audi A3 Sportback China 2014 ➤ .
Audi TT 2015 ➤ , Audi Q7 2016 ➤
Audi A4 Avant 2015 ➤ , Audi A4 2015 ➤ ,
Audi R8 2015 ➤ , Audi A4 China 2016 ➤ ,
Audi Q5 2017 ➤ , Audi Q2 2016 ➤ ,
Audi A5 2016 ➤ , Audi A8 2018 ➤ ,
Audi A7 Sportback 2018 ➤
Audi A6 2019 ➤ , Audi Q8 2018 ➤ ,
Audi Q3 2019 ➤
Audi A1 Sportback 2018 ➤,
Audi e-tron 2019 ➤ , Audi A3 2021 ➤ ,
Audi Q8 e-tron 2024 ➤
 Refrigerant R1234yf Servicing
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Edition 07.2024



List of Workshop Manual Repair Groups

Repair Group

00 - General, Technical Data

87 - Air Conditioning



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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General, Technical Data

Safety Precautions

(Edition 07.2024)

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 Gas Canisters", page 8

1.1 **General Safety Precautions**

Risk of accident due to the vehicle rolling.

When working on a vehicle, it always needs to be secured against rolling.

- Automatic transmission/dual clutch transmission: select "P".
- Manual transmission: engage 1st gear.
- Set the parking brake.

There is a risk of injury due to the radiator fan.

Body parts can be pinched or pulled in if the radiator fan starts running by itself.

- When working near the radiator, maintain a distance from the radiator fan.
- Do not reach into the radiator fan when disconnecting the connector.

There is a risk of injury due to UV radiation and glare.

Eye and skin damage are possible when the headlamps are turned on.

- Do not look into the beam of light.
- Turn off the ignition and all electrical equipment.
- Place the vehicle key and other start authorization systems (such as smartphones) outside of the vehicle.
- Do not operate the flashers.
- Only disassemble the LED headlamps according to the repair manual.

1.2 Safety Precautions when Working on Vehicles with High-Voltage System

High voltage increases the risk of fatal injury

ate or commercial purposes, in part or in whole, is not The high-voltage system 195 under high voltages. Electrocution by antee or accept any liability direct contact or electroling specific the specific direct contact or electric arc can cause severe bodily injury or fatal injury.

- The high-voltage system must be de-energized when performing work on it.
- Have a high-voltage technician (HVT) or a high-voltage expert (HVE) de-energize the high-voltage system.
- Some work procedures require the system to be de-energized. Refer to ⇒ Rep. Gr. 00; High-Voltage System Danger Classification .

There is a risk of fatal injury due to electric and magnetic fields

The high-voltage system emits electric and magnetic fields. Fatal or serious bodily injuries are possible if active implants (such as pacemakers or insulin pumps) malfunction.

Individuals with active medical implants must not perform any work on high-voltage systems.

There is a risk of fatal injury due to high voltage if high-voltage components and cables are damaged.

The high-voltage system is under high voltage. Electrocution by direct contact or electric arc can cause fatal or serious bodily injury if high-voltage components and high-voltage cables are damaged.

- Visually inspect the high-voltage components and the highvoltage cables.
- Do not use cutting, shaping, or sharp-edged tools near highvoltage components and high-voltage cables.
- Do not weld, solder, or use thermal bonding or hot air near high-voltage components and high-voltage cables.



There is a risk of damaging the high-voltage cables.

Incorrect handling can damage the insulation on high-voltage cables or high-voltage connectors.

- Do not use the high-voltage cables and the high-voltage connectors for support.
- Do not support tools on the high-voltage cables and the high-voltage connectors.
- Do not bend or kink high-voltage cables.
- Pay attention to the coding when connecting the high-voltage connectors.

There is a risk of injury if the parking heater and A/C activates.

The parking heater and A/C can switch on unintentionally on electric and hybrid vehicles if it is activated. Parts of the body can be pinched or pulled in by the radiator fan or the fresh air blower starts if it to run by itself, or by moving parts of the heater and A/C unit.

Deactivate the parking heater and A/C and its timer functions.

1.3 Safety Precautions when Working on Vehicles with Internal Combustion **Engine**

There is a risk of poisoning due to internal combustion engine or commercial purposes, in part or in whole, is not . AUDI AG does not guarantee or accept any liability exhaust with respect to the correctness of information in this document. Copyright by AUDI AG.

Operating the internal combustion engine produces poisonous exhaust. Injury to the respiratory system and poisoning are possible.

Operate the internal combustion engine in closed rooms only with a exhaust extracting system switched on.

There is a risk of injury if the internal combustion engine starts unexpectedly.

The engine may start unexpectedly in vehicles with the Start/ Stop System activated. Parts of the body can be pinched or pulled in.

- Switch off the ignition and electrical equipment.
- Place the vehicle key and other start authorization systems (such as smartphones) outside of the vehicle interior.

There is a risk of injury when the system is in drive ready mode.

It is difficult to identify when drive ready mode is active in hybrid vehicles. Parts of the body can be pinched or pulled in.

- Switch off the ignition and electrical equipment.
- Place the vehicle key and other start authorization systems (such as smartphones) outside of the vehicle interior.

There is a risk of injury due to the exhaust system components

It is possible to injure hands and other parts of the body due to hot and sharp-edged components in the exhaust system.

- Allow the exhaust system to cool.
- Wear safety gloves.

Risk of injury due to hot condensation and particles in the exhaust system.

Hot condensation and particles can be in the exhaust system. Injury to the eyes, skin and respiratory system and poisoning are possible.

- Wear safety gloves.
- Wear protective eyewear.
- In closed areas switch on the exhaust extracting system.

Health risk due to chemical materials in the exhaust system components.

Health risk due to disassembled components of the exhaust gas treatment.

Never cut, open or saw the components of the exhaust gas treatment.

Risk of injury due to electrocution

The ignition system is under high voltage when the engine is running. It is possible to be electrocuted by touching the ignition **system** by copyright. Copying for private or commercial purposes, in part or in whole, is not

emitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liab Do not touch ignition wires when the engine is running or turning at cranking speed.





The reducing agent increases the risk of injury

Reducing agents may cause eye and skin irritation as well as injury to the respiratory system and possible poisoning.

- Wear protective eyewear.
- Wear safety gloves.
- Wear protective work clothing.
- In closed areas switch on the exhaust extracting system.

1.4 Safety Precautions when Working on Fuel System

There is a risk of injury due to the fuel being under pressure.

The fuel system is under pressure. Injuries are possible from fuel spraying out.

Before opening the fuel system:

- Wear protective evewear.
- Wear safety gloves.
- Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

Leaking fuel increases the risk of fire.

When the battery is connected, the door contact switch activates the fuel pump when opening the driver door. Leaking fuel may ignite and start a fire.

Before opening the fuel system, cut off the power supply to the fuel pump.

Safety Precautions when Working on A/C Systems 1.5

There is a risk of explosions from ignition sources.

There is a risk of explosions due to ignition sources near the A/C systems and refrigerant canisters. Leaking refrigerant can ignite and cause an explosion. Severe bodily injury or death caused by explosions possible.

Do not bring any ignition sources near A/C systems and refrigerant canisters.

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There is a risk of asphyxiation and poisoning from refrigerant.

Refrigerant fumes can cause problems ranging from a dry cough and nausea to asphyxiation and poisoning. Refrigerant is heavier than air and will collect in the lower areas.

- Do not inhale refrigerant vapors.
- Only work on the refrigerant circuit in well-ventilated areas.
- Store refrigerant canisters in well-ventilated spaces.
- Do not work in or near to lower areas.
- Switch on the exhaust extracting system.

There is a risk of frostbite from refrigerant.

When working on the A/C system, refrigerant under pressure can escape. Frostbite on the skin and other parts of the body is possible.

- Wear safety gloves.
- Wear protective eyewear.
- Extract or drain refrigerant and immediately open the refrigerant circuit.
- If more than 10 minutes elapse after extracting or draining the refrigerant and the refrigerant circuit has not been opened, extract or drain the refrigerant again. Pressure develops in the refrigerant circuit due to evaporation.

1.6 Safety Precautions when Working on Vehicles with Parking/Auxiliary Heater

There is a risk of poisoning due to exhaust.

The parking/auxiliary heater produces poisonous exhaust fumes when in operation. Injury to the respiratory system and poisoning are possible.

- Only turn on the parking/auxiliary heater in enclosed spaces if there is exhaust extraction.
- Switch off the parking/auxiliary heater in closed areas that have no exhaust extracting system.

There is a risk of accident and injury due to activated parking/auxiliary heater timer.

For vehicles with an activated time infor the parking/auxiliarys, in part or in whole, is not heater, the parking/auxiliary heater can turn on unintentionally or accept any liability Being poisoned by exhaust furnes and being burned by not copyright by AUDI AG. parking/auxiliary heater components is possible, along with the risk of high temperatures causing fires and explosions.

Deactivate the timer for the parking/auxiliary heater.



1.7 Safety Precautions during Road Tests with Testing Equipment

There is a risk of injury from unsecured testing equipment.

If the front passenger side airbag unit deploys during an accident, testing equipment that is not properly secured will be thrown around dangerously.

- Secure testing equipment on the rear seat.
- Have a second person operate the testing equipment on the rear seat.
- In vehicles with two seats, deactivate the front passenger airbag and move the front passenger seat as far back as possible.

1.8 Safety Precautions when Working on the Passenger Protection System

Safety Precautions when Working on the Passenger Protection System

There is a risk due to unintentional deployment of passenger protection. Passenger protection pyrotechnic components can be triggered unintentionally. Fatal or serious bodily injuries are possible.

- Work on passenger protection should only be performed by specially trained personnel.
- Repairs near passenger protection pyrotechnic components: mechanical or thermal load or injury can result in the loss of restraint functions in a collision or lead to unintentional deployment.
- Do not perform an electric continuity test or measurement in the ignition circuits. Only perform the visual inspection of the wire routing with the ignition switched off.
- The pyrotechnic components may be checked only when they are installed and with a vehicle diagnostic tester approved by the manufacturer.
- Pyrotechnic components must not be opened or repaired. Always use new parts.
- Only use original components without damage.
- Only disconnect and connect the airbag control module connector if the control module is securely bolted to the body.
- The airbag control module contains vehicle-specific data. Do not install in other vehicles.
- Follow the instructions for transport and storage of passenger protection components.

There is a risk of inhaling dust and gases immediately after pyrotechnic components are ignited.

- Dust and gases are released immediately after pyrotechnic components are ignited. If inhaled, dust and gases can impair health.
- Allow the vehicle to air out.

Clean the interior while wearing a mouth and nose protec-

Avoid skin contact with pyrotechnic components.

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Follow any local applicable disposal guidelines.

Risk due to passenger protection with limited functionality

- The passenger protection functionality may be limited after a collision. Fatal or serious bodily injuries are possible.
- Check the passenger protection after a collision.

1.9 Safety Precautions when Working with Chemicals

There are health risks

Chemical substances can be absorbed via the skin, the respiratory system or by swallowing. This can lead to acute and chronic health complications.

- Observe the material safety data sheets and supplementary information from the manufacturers.
- Do not eat, drink, smoke, etc. when handling chemical substances.
- Use personal protective equipment.

1.10 Safety Precautions when Working with Compressed-Gas Canisters

Risk of personal injury and property damage caused by improper handling of compressed-gas canisters.

- When working with compressed-gas canisters, certain country-specific laws, standards and guidelines must be kept in mind.
- Observe the material safety data sheets and supplementary information from the manufacturers.
- Use personal protective equipment.

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2 Repair Information

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- ⇒ "2.2 Information about Using the Repair Manual", page 9
- ⇒ "2.3 Replacement Parts, Operating Materials, and Consuma-
- ⇒ "2.4 Transport and Storage", page 10
- ⇒ "2.5 Qualification", page 10
- ⇒ "2.6 Environmental Protection", page 11
- ⇒ "2.7 Guidelines for Clean Working Conditions", page 11
- ⇒ "2.8 Identification Plates", page 12
- ⇒ "2.9 Bolts and Nuts", page 12
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- ⇒ "2.12 Seals and Gaskets", page 13
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- ⇒ "2.14 Line Routing and Securing", page 14
- ⇒ "2.15 Working on the Refrigerant Circuit", page 15
- ⇒ "2.16 Refrigerant and Refrigerant Oil", page 16

2.1 Laws, Standards, Guidelines and Risk Assessments

- Country-specific laws, standards and guidelines must be adhered to, in addition to the repair manual content.
- The employer must determine the dangers by assessing the work conditions and thus derive measures for work safety. Such a risk assessment is necessary for each procedure.

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2.2 Information about Using the Repair Manual

- Follow the process in the repair manual to consistently repair a vehicle.
- The repair manual consists of several assembly groups which are dependent on each other or build upon each oth-
- Completeness is only guaranteed in its total context.
- Links to other assembly groups must be followed.

Tools:

- The special tools and equipment specified in the repair manual must be used. Refer to the ⇒ Electronic Parts Catalog (ETKA) for operating instructions.
- Use commercially available tools if no special tool is specified.

2.3 Replacement Parts, Operating Materials, and Consumables

Replacement Parts:

- The degree of disassembly described in the repair manual has been approved by the manufacturer and must be followed.
- In order to ensure that the repair quality is in line with the manufacturer specifications, using original replacement parts is recommended. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- All information and technical specifications are for original DLAG does not guarantee or accept any liability replacement parts.

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- The components must be checked for damage and function before installation.

Installation guideline for the radiator, condenser, and charge air cooler:

After installing, the radiator, condenser, and charge air cooler may have slight impressions on their slats. This is not damage. Do not replace the radiator, condenser, or charge air cooler because of those small indentations.

Operating Materials and Consumables:

- ◆ In order to ensure that the repair quality is in line with the manufacturer specifications, it is recommended to use operating materials and consumables offered by the manufacturer. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Follow the manufacturer instructions provided on the label.
- Use operating materials and consumables before the expiration date.

Information about the refrigerant oil:

- Refrigerant oil is highly hygroscopic. This means that refrigerant oil takes the moisture from the surrounding air.
- The containers must always be stored in another container and must be closed immediately after every use.

2.4 Transport and Storage

- Pay attention to country-specific transport and storage requirements.
- Pay attention to component specific transport and storage requirements.

Transport Guidelines:

Components containing liquids:

- Components containing liquids must be drained before transport. If it is not possible to drain the component, then the parts must be packed properly.
- If a fault is preventing drainage, contact the importer.
- ◆ Immediately seal the connection ports of components that fluid after removal or residual draining. If available, use the plugs from the new part.

2.5 Qualification

Only trained personnel may perform repair work.



- The qualifications specified in the repair manual are required to ensure the repair is performed safely and correctly.
- Implementation of this qualification is subject to the respective market, whereas country-specific requirements must be considered.
- The employer is responsible to verify the necessary qualification.
- The Web Based Training and Self-Study Programs provided by the manufacturer are basics for performing the respective repair.
- Web Based Training and Self-Study Programs describe the construction and function of a technology.

2.6 **Environmental Protection**

- Country-specific laws and regulations on recycling/disposal must be taken into account.
- Components, working materials and expendable items must be disposed in an environmental friendly way.

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2.7 **Guidelines for Clean Working Conditions**

Even minor contamination can lead to malfunctions and leaks. Therefore, follow these guidelines for clean working conditions during all work:

- Thoroughly clean the connection points/maintenance openings and the surrounding area before loosening/opening.
- Use lint-free cleaning cloth for cleaning.
- Seal off cables, connections and components immediately after opening them, using seals from the Engine Bung Set -VAS 6122- .
- Place removed components on a clean surface and cover them with lint-free cleaning cloths.
- Carefully cover or seal opened components.
- Immediately remove leaking liquids and clean the affected areas.
- Only install clean components. Wear clean gloves and remove replacement parts from the packaging just before in-
- Supplied transport and protective packaging and sealing cover should only be removed immediately before installing.
- Protect the disconnected electrical or optical connectors from dirt and moisture and only connect when they are dry.

Vehicle and Engine Wash:

Never direct the jet of water from a pressure washer at electrical components or connectors when cleaning the vehicle or engine.

Αυδι

2.8 **Identification Plates**

- When replacing components, any identification plates on the used parts that indicate a replacement part number in the ⇒ Electronic Parts Catalog (ETKA) must be transferred to the new part to meet homologation regulations.
- If there are illegible or damaged identification, warning, or information labels on vehicle components, replace them with new labels affixed in the same locations. For the allocation, refer to the ⇒ Electronic Parts Catalog (ETKA).

2.9 **Bolts and Nuts**

- All threaded connections must be tightened to the specification to ensure safe operation in road traffic.
- Loosen the bolts opposite the tightening sequence.
- Loosen or tighten bolts or nuts that do not have a specified tightening sequence in a diagonal sequence in stages.
- Always replace self-locking nuts.
- Always replace self-locking bolts. For exceptions, see the Overviews.
- Always replace corroded bolts and nuts.
- Threaded bolt holes where self-locking bolts or bolts with locking compound that will be installed must be cleaned (for example, using a thread tap). Otherwise there is the risk that the bolts could break off when they are removed again.
- Threads in blind holes must be free of fluids and contamina-
- The tightening specifications given apply to non-lubricated bolts and nuts.
- The specified tightening specifications apply to standard tools. When using socket wrenches a correction value must be considered.

Self-tapping bolts:

- Installing into existing threads: position the self-tapping bolts by hand and insert until they find the old threads. Then tighten the bolts to the tightening specifications.
- Install in the new tapping threads: position the self-tapping bolts on the holes and install all the way under light pressure. The bolts cut a new thread by doing sprotfield unless autorised by AUDI AG. AUDI AG does not guarantee or accept any liability the bolts to the tightening specifications. with respect to the correctness of information in this document. Copyright by AUDI AG.

2.10 Impact Wrench, Using

Pay attention to additional information in the repair manual.

Exceptions:



Impact wrenches are not permitted when working within an opened high-voltage battery or when working near natural gas systems. Pay attention to the general information.

Removing/loosening:

- Removing or loosening nuts using a suitable impact wrench is generally permitted.
- Bolts (bolt head and protruding threads) and nuts must be cleaned before removal.

Installing/tightening:

Installing or tightening nuts using a suitable impact wrench is permitted, if the conditions that follow are adhered to.

- Position the bolts and nuts by hand.
- Only use an impact wrench with an adjustable speed and torque range.
- The impact function of the impact wrench must not be used.
- The maximum speed must not exceed 300 RPM.
- Use suitable screwdriver bits (such as plastic-coated bits) near delicate surfaces.
- Use a low speed when installing or tightening bolts with locking fluid or self-locking nuts.
- Only install or tighten bolts and nuts until they stop.
- Apply the additional tightening specification by hand using a torque wrench.
- To perform the additional turn, use a torque wrench with an angle gauge or a rigid wrench.

2.11 Contact Corrosion

- Contact corrosion can occur if incorrect fasteners (bolts, nuts, washers, etc.) are used. For this reason, only fasteners with a special surface coating may be installed.
- Original parts and original accessories are recommended which were developed and checked for the respective intended purpose.

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2.12 Seals and Gaskets

- Check the sealing surfaces of the seals and gaskets for burrs or damages and clean thoroughly before installing.
- Check seals and gaskets for damage before installing.
- The respective overview specifies if seals and gaskets must be replaced. If no overview is provided, these parts must always be replaced after removal.
- Make sure the seals are seated correctly on the cables or in the groove.

Unless specified otherwise:

Coat the seals at the outer circumference with the respective medium (oil, coolant, refrigerant oil, etc.).

Shaft seals:

- Lightly oil the outer edge of shaft seals before installing.
- The open side on the shaft seals faces the fluid to be sealed
- Certain shaft seals (for example PTFE) must be installed dry. Pay attention to the repair manual for this.
- For shaft seals in the transmission area, the space in between the sealing lips must be filled with radial shaft seal sealing grease half way.

2.13 Connectors, Disconnecting

- Before disconnecting a connector, always make sure that the ignition is switched off and the vehicle key or other start authorization systems (such as a smartphone) are outside of the vehicle interior. This will prevent the vehicle from switching on unintentionally. Also, this can result in unintended DTC memory entries that must be cleared after the repair.
- Perform the electrostatic discharge right before disconnecting a connector, for this, briefly touch the door striker.
- Do not touch open contact pins with hands.
- When connecting a connector, make sure the locking mechanism on the connector is latched correctly. Pull on it briefly to check.

2.14 Line Routing and Securing

- Lines include: fuel, coolant, hydraulic, vacuum, EVAP system, high-voltage, and refrigerant lines as well as wires.
- There is a risk of damage to wires from moving or hot components.
- Make sure there is sufficient clearance to moving or hot components.
- Route lines in Protected by Gray light Carting for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- If necessary, draw sketches or take pictures.
- Label lines before removal to prevent interchanging them and to ensure the original installation position.
- Check the routing after securing lines. They must be inserted in their brackets and must not come into contact with other components.
- Replace damaged cable ties, cable brackets and mounting elements.



2.15 Working on the Refrigerant Circuit

- ♦ Refrigerant oil is hygroscopic, which means it absorbs moisture from the surrounding air. If the refrigerant circuit was open for a longer period of time, the refrigerant oil and the dryer element will be saturated with moisture. Before charging the control of the control ing the refrigerant circuit, evacuate it thoroughly and replace the drying element.
- Only perform welding and soldering work near A/C system components while the refrigerant circuit is drained.
- It is possible that the plastic foil on the inside will tear and destroy the refrigerant lines in this way. Never bend refrigerant lines with a radius smaller than r = 10 cm.

North American Region (NAR):

- private or commercial purposes, in part or in whole, is not Such components must be replaced with genuine parts cept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Evaporators must meet the applicable SAE standards for the vehicle.

Αυδι

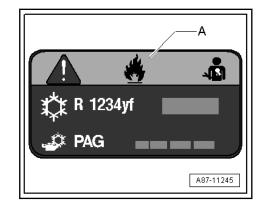
2.16 Refrigerant and Refrigerant Oil

Refrigerant

- Refrigerant systems may only be filled with the refrigerant that is specifically approved by the manufacturer for the ve-
- A/C Service Stations may only be used with the refrigerant they were designed for.
- An information label -A- indicating the refrigerant used is provided in the engine compartment on the lock carrier or in the plenum chamber.
- Different refrigerants are never to be mixed.

Refrigerant Oil

- Refrigerant oil mixes with the refrigerant (approximately 10-40% depending on the compressor type and refrigerant quantity). The continuous circulation in the refrigerant circuit lubricates the moving parts.
- Special synthetic refrigerant oils are used in connection to R1234yf-A/C systems, for example polyalkylene glycol-based (PAG) oil with specific additives adjusted for the refrigerant. This is necessary, because for example mineral oil does not mix with R1234yf and because without these additives unwanted reactions to the refrigerant or the refrigerant circuit components can occur. In addition, the components of the A/C system could be affected if the mixture flows through the refrigerant circuit under pressure at high temperatures or the lubricating film in the A/C compressor tears. The use of non-approved oils can lead to the failure of the A/C system and exclusive use is therefore to be made of authorized refrigerant oils. Refer to the ⇒ Electronic Parts Catalog (ET-
- Refrigerant oils specifically developed for refrigerant circuits with refrigerant R1234yf and R134a may only be used in a refrigerant circuit if the according approvals are available. Refer to the ⇒ Electronic Parts Catalog (ETKA) and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil .
- The most important properties are the high degree of solubility with refrigerant, good lubrication, no acid content and very minimal water content. For this reason only very specific oils may be used. Refer to the ⇒ Electronic Parts Catalog (ETKA) and the ⇒ Heating, Ventilation and Air Conditioning;
 Rep. Gr. 00; Technical Data; Refrigerant @ils, Capacities or commercial purposes, in part or in whole, is not for a list of the approved refrigerant oils and capacities DI AG. AUDI AG does not guarantee or accept any liability ation in this document. Copyright by AUDI AG.
- PAG oils, which are appropriate for refrigerant R1234yf, are highly hygroscopic and do not always mix with other oils. For this reason only use approved refrigerant oils.
- Moisture and acids promote aging of refrigerant oil, causing it to become dark and viscous as well as corrosive towards metals. For this reason, keep containers with refrigerant oil closed to protect it from moisture and close opened containers immediately.
- Only refrigerant oil that is approved for the respective refrigerant and the A/C compressor that is installed may be used. Refer to the ⇒ Electronic Parts Catalog (ETKA)
- Do not use ester-based oils (polyolester oils/POE oils). These are currently only for larger systems under different operating conditions (not for vehicle A/C systems).





- Do not leave containers of refrigerant oil open when storing, because it is hygroscopic (it attracts moisture).
- Always keep containers with refrigerant oil and the refrigerant circuit closed.



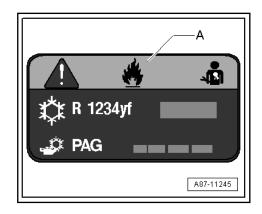
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3 Identification

⇒ "3.1 Refrigerant Circuit Information Label", page 18

3.1 Refrigerant Circuit Information Label

- The information label -A- provides information about the type of refrigerant used, the refrigerant quantity filled at production and the refrigerant oil filled.
- Symbols on the information label -A- indicate the dangers which may occur when handling refrigerant and/or when working on the refrigerant circuit.
- Norms and standards may also be stated, such as the applicable SAE standards defined in the USA.
- Depending on the version and the vehicle date of manufacture, the GWP value (global warming potential) may also be specified for the refrigerant used.
- Depending on the version and the vehicle date of manufacture, the CO2 equivalents "CO2 eq" of R1234yf, may also be specified. The value states what influence the quantity of R1234vf filled in this refrigerant circuit has on the Earth's atmosphere, if it completely escapes. The influence of carbon dioxide ("CO2") is used here as a reference value.
- The capacities and the type of refrigerant oil specified on the information label -A- show the status at the time of vehicle production.





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4 **Technical Data**

⇒ "4.1 Refrigerant Capacities", page 19

⇒ "4.2 Refrigerant Oil Capacities", page 19

4.1 **Refrigerant Capacities**

Refrigerant capacities can be found in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Capacities.

4.2 Refrigerant Oil Capacities

⇒ "4.2.1 Refrigerant Oil Capacities", page 19

- Refrigerant oil capacities can be found in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil Capacities .
- Depending on the manufacturer of the A/C compressor different refrigerant oils are approved for the installed A/C compressor, for this reason pay attention to the correct allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).

4.2.1 Refrigerant Oil Capacities

- Refrigerant oil capacities can be found in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil Capacities .
- Depending on the manufacturer of the A/C compressor different refrigerant oils are approved for the installed A/C compressor, for this reason pay attention to the correct allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).



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5 Technical and Physical Principles

⇒ "5.1 Physical Characteristics", page 20

5.1 Physical Characteristics

⇒ "5.1.1 Critical Point", page 20

⇒ "5.1.2 Refrigerant Vapor Pressure Table", page 20

5.1.1 Critical Point

The critical point (critical temperature and critical pressure) means the substance has gone above the point when there is no longer a boundary between liquid and gas.

A substance above its critical point is always in the gaseous

At temperatures below the critical point, all types of refrigerant in pressure reservoirs exhibit both a liquid and a gas phase meaning there is a layer of gas above the liquid.

As long as there is still gas present in the cylinder next to the fluid, pressure is dependent on ambient temperature. Refer to Refer to ⇒ "5.1.2 Refrigerant Vapor Pressure Table", page 20.

5.1.2 Refrigerant Vapor Pressure Table

For each refrigerant there is a specific vapor pressure table. This table makes it possible to determine the vapor pressure acting on the column of liquid in a reservoir if the temperature of the reservoir is known.

- In terms of absolute pressure, "0 bar (0 psi)" corresponds to an absolute vacuum. Normal ambient pressure (positive pressure) corresponds to "1 bar (14.5 psi)" absolute pressure. "0 bar (0 psi)" pressure corresponds to an absolute pressure of one bar on most pressure gauges (indicated for example by "-1" bar below "0").
- Pressure can be measured in several units, 1 MPa (megapascal) corresponds to 10 bar (145.04 psi) pressure or 145 psi. 1 bar (14.5 psi) absolute pressure with a relative pressure value of 0 bar (0 psi), approximately corresponds to the ambient pressure (atmospheric pressure).

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Temperature in °C (°F)	Pressure in bar (positive pressure) of R1234yf
-40 (-40)	-0.40
-30 (-22)	-0.01
-25 (-13)	0.12
-20 (-4)	0.50
-15 (5)	0.83
-10 (14)	1.21
-5 (23)	1.65
0 (32)	2.15
5 (41)	2.72
10 (50)	3.36
15 (59)	4.09
20 (68)	4.90
25 (77)	5.81
30 (86)	6.82
35 (95)	7.93



Temperature in °C (°F)	Pressure in bar (positive pressure) of R1234yf
40 (104)	9.17
45 (113)	10.52
50 (122)	12.01
55 (131)	13.64
60 (140)	15.41
65 (149)	17.35
70 (158)	19.46
75 (167)	21.75
80 (176)	24.24
85 185()	26.94
90 (194)	29.09







Air Conditioning

Safety Precautions

Note the safety precautions. Refer to <u>⇒ "1 Safety Precautions"</u>, <u>page 1</u>.



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2 Refrigerant Circuit

- ⇒ "2.1 System Overview Refrigerant Circuit", page 23
- ⇒ "2.2 General Description Refrigerant Circuit Components", page 27
- ⇒ "2.3 Leaks, Finding", page 28
- ⇒ "2.4 Components, Replacing", page 35
- ⇒ "2.5 Refrigerant Circuit, Cleaning", page 44
- ⇒ "2.6 Main Wiring Diagram for Cleaning the Refrigerant Circuit", page 46
- ⇒ "2.7 Main Wiring Diagram, Electrically-Driven A/C Compressor, Cleaning", page 52
- ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

2.1 System Overview - Refrigerant Circuit

- ⇒ "2.1.1 System Overview Refrigerant Circuit with Expansion Valve and Receiver/Dryer", page 23
- ⇒ "2.1.2 System Overview Refrigerant Circuit with Restrictor and Reservoir", page 24
- ⇒ "2.1.3 System Overview Refrigerant Circuit with Electrical any liability ly-Driven A/C Compressor (with or without Battery Cooling Module)", page 25

2.1.1 System Overview - Refrigerant Circuit with Expansion Valve and Receiver/Dryer

- As an example, the following illustration shows a refrigerant circuit with two evaporators and an internal heat exchanger.
- The layout of the refrigerant circuit may show differences which are vehicle-specific. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).

The arrows indicate the refrigerant flow direction.

HD = high pressure side

ND = low pressure side

1 - A/C Compressor Regulator Valve - N280-

Only for mechanical A/C compressor

2 - A/C Compressor

3 - Belt Pulley

Depending on vehicle equipment with A/C Clutch - N25-

4 - Pressure Relief Valve

5 - Refrigerant Pressure Sen-

□ Vehicle-specific versions

6 - Condenser

□ As an example, with receiver/dryer

7 - Receiver/Dryer

- Installed to the condenser or installed into the condenser
- With dryer cartridge

8 - Service Connection - High **Pressure Side**

- With closure cap
- With evacuating and charging valve

9 - Refrigerant Line with Inner **Heat Exchanger**

10 - Front Expansion Valve

11 - Front Evaporator

12 - Service Connection - Low Pressure Side

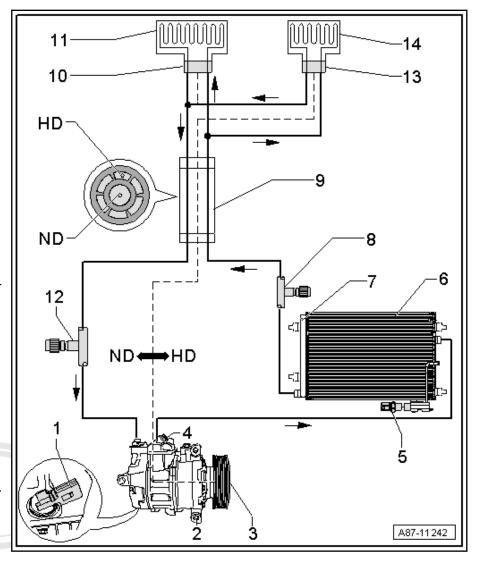
- With closure cap
- With evacuating and charging valve

13 - Rear Expansion Valve

- Installed depending on vehicle equipment ommercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- 14 Rear Evaporator respect to the correctness of information in this document. Copyright by AUDI AG.
 - ☐ Installed depending on vehicle equipment

2.1.2 System Overview - Refrigerant Circuit with Restrictor and Reservoir

- The following illustration shows a refrigerant circuit with an evaporator as an example.
- The layout of the refrigerant circuit may show differences which are vehicle-specific. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).





The arrows indicate the refrigerant flow direction.

HD = high pressure side

ND = low pressure side

1 - A/C Compressor Regulator Valve - N280-

- Only for mechanical A/C compressor
- 2 A/C Compressor
- 3 Belt Pulley
 - □ Depending on vehicle equipment with A/C Clutch - N25-
- 4 Pressure Relief Valve
- 5 Condenser
- 6 Refrigerant Pressure Sen-
 - □ Vehicle-specific versions. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

7 - Service Connection - High **Pressure Side**

- With closure cap
- With evacuating and charging valve
- 8 Restrictor
- 9 Evaporator

10 - Service Connection - Low Pressure Sided by copyright. Copying

- With closure cap correctness
- With evacuating and charging valve

11 - Reservoir

□ With dryer cartridge

10 $ND \rightleftharpoons HD$ 11 A87-11243

2.1.3 System Overview - Refrigerant Circuit with Electrically-Driven A/C Compressor (with or without Battery Cooling Module)

- ◆ The following illustration shows a refrigerant circuit with an expansion valve and a second evaporator for cooling the battery and an inner heat exchanger as an example.
- The layout of the refrigerant circuit is vehicle-specific. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).

The arrows indicate the refrigerant flow direction.

HD = high pressure side ND = low pressure side

1 - A/C Compressor

2 - Pressure Relief Valve

3 - Condenser

■ With receiver/dryer and dryer cartridge

4 - Receiver/Dryer

Condenser stock

5 - Refrigerant Pressure Sensor

Vehicle-specific versions. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

6 - Service Connection - High **Pressure Side**

- With closure cap
- With evacuating and charging valve

7 - Refrigerant Line with Inner **Heat Exchanger**

8 - Refrigerant Shut-Off Valve

- ☐ There are different names. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .
- Only for vehicles with a battery cooling module

9 - Expansion Valve

On the evaporator in the heater and A/C unit

10 - Front Evaporator

☐ Heater and A/C Unit Evaporator

11 - Expansion Valve with Shut-Off Valve

☐ There are different names. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

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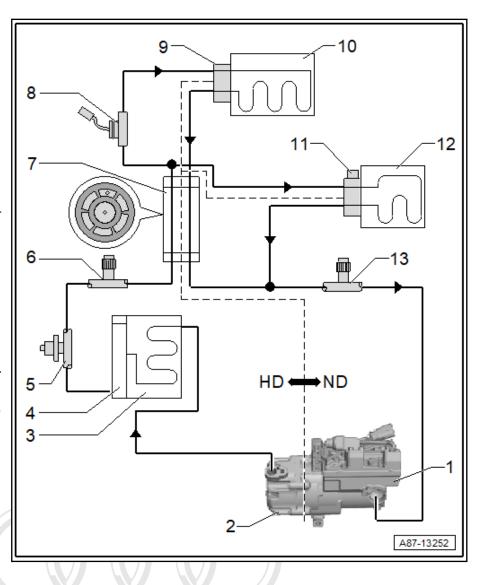
- On the evaporator in the battery cooling module
- Only for vehicles Withing to atterior Cooling on socialing commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

12 - Evaporator

Evaporator in Battery Cooling Module

13 - Service Connection - Low Pressure Side

- With closure cap
- With evacuating and charging valve





2.2 General Description - Refrigerant Circuit Components

<u>"2.2.1 Quick-Release Coupling Connections on Refrigerant</u> Circuit", page 27

⇒ "2.2.2 Refrigerant Circuit Connections with Switch Valve", page 27

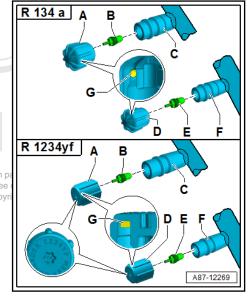
Quick-Release Coupling Connections 2.2.1 on Refrigerant Circuit

Service connections with Schrader valve (needle valve or Push

- The service connections -C- and -F- are designed so that only the refrigerant-specific service couplings can be connected.
- There are different connections for the high-pressure side -C- and the low-pressure side -F-.
- Valve insert -B- and -E- (designation: Schrader or needle valve)

Allocation in the vehicle. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87 Refrigerant Circuit (vehicle-specific repair manual). with respect to the correctness of information in this document. Copy

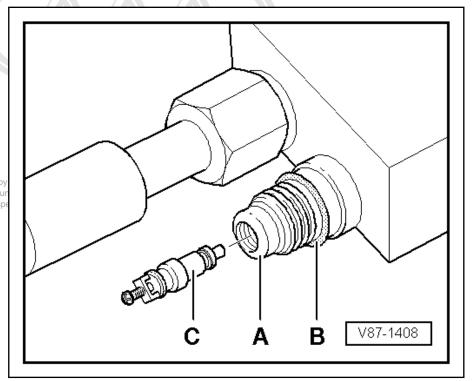
- Extract the refrigerant before removing the valves.
- To remove and install the valve insert when the refrigerant circuit is discharged, use, for example, an adapter from the Refrigerant Sockets - T10364- .
- Tighten the valve insert very carefully because the tightening specification is very small.
- There are different versions of these valves, which means there are different tightening specifications. For a valve insert -C- with VG5 threads (5.2 x 0.7 mm, tire valve), the tightening specification is 0.4 Nm ± 0.1 Nm. For a valve insert with an M6 x 0.75 mm thread, the tightening specification is 0.9 Nm ± 0.1 Nm. For a valve insert with an M8 x 1.0 mm thread, the tightening specification is 2.0 Nm ± 0.2 Nm.
- There are different versions of these valve caps, which means there are different tightening specifications. For a valve cap with an M 8 x 1 mm or M10 x 1 mm thread, the tightening specification is 0.4 Nm ± 0.1 Nm.
- There are different versions of these valves, valve inserts and their caps. Make sure the version of the valve inserts and the allocation of the closure caps is correct. Refer to the ⇒ Electronic Parts Catalog (ETKA).



2.2.2 Refrigerant Circuit Connections with Switch Valve

A - Connection (soldered in)

- B Seal
- C Valve (with Seal)
 - Tightening specification. Refer to 2.2.1 Quick-Release Coupling Connections on Refrigerant Circuit", <u>page 27</u>
 - □ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) . with resp



2.3 Leaks, Finding

- ⇒ "2.3.1 General Information for Finding Leaks on the Refrigerant Circuit", page 28
- ⇒ "2.3.2 Leaks, Finding using Vacuum Test", page 29
- ⇒ "2.3.3 Leaks, Finding using Nitrogen Pressure Test", page
- ⇒ "2.3.4 Leaks, Finding using Forming Gas", page 30
- ⇒ "2.3.5 Leaks, Determining using Electronic Leak Detector", <u>page 32</u>
- ⇒ "2.3.6 Leaks, Determining with UV Leak Detection System", <u>page 32</u>

2.3.1 General Information for Finding Leaks on the Refrigerant Circuit

All approved procedures for finding leaks for this refrigerant by the manufacturer will be described in this repair manual.

- Leaking refrigerant circuits must not be filled with refrigerant.
- The methods for detecting leaks must be chosen on a case by case basis. Depending on the size of the leak, different methods must be used, to detect the leak.
- Smaller leaks may be found with the following methods, for tem", page 32.
- Most of the times, small leaks at the refrigerant circuit cannot be found using a vacuum or pressure test. The incoming air



and the amount of test gas flowing out is too small to be able to locate the faulty location based on noise.

- Depending on the ambient conditions, larger leaks at the refrigerant circuit may be located by, for example, noises which occur at the faulty location during the vacuum or pressure test. Refer to Refer to ⇒ "2.3.2 Leaks, Finding using Vacuum Test", page 29 or Refer to ⇒ "2.3.3 Leaks, Finding sure test. Refer to Refer to ⇒ using Nitrogen Pressure Test", page 29.
- Leaks on the refrigerant circuit that are greater than 100 g (3.5 oz) of refrigerant loss each year are not always clearly detectable with the vacuum test or with the pressure test, depending on the ambient conditions (ambient noise, leak location etc.). The incoming air and/or the amount of nitrogen flowing out may be too small to generate any noise that would indicate a faulty location. Refer to Refer to ⇒ "2.3.4 Leaks, Finding using Forming Gas", page 30.

2.3.2 Leaks, Finding using Vacuum Test

Special tools and workshop equipment required

♦ A/C Service Station

Procedure

- Evacuate the refrigerant circuit. Refer to ⇒ "3.4 Refrigerant Circuit, Evacuating", page 92.
- Determine the leak location by searching for noises.
- Repair leaks.
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94

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Special tools and workshop equipment required

- Pressure Gauge Set with Pressure Reducer for Nitrogen (maximum reducing pressure: 13.5 bar (195.8 psi))
- Service Coupling (can also be used from the A/C Service Station)
- Filler Hose
- Nitrogen Cylinder

Tools, Preparation

- Connect the Pressure Gauge Set with Pressure Reducer for Nitrogen (maximum reducing pressure: 13.5 bar (195.8 psi)) -1- to the nitrogen cylinder -3- and the filler hose -2- (for example with a M12 x 1.5 -6G thread according to SAE J639).
- Connect the Service Coupling with the filler hose -2-.

Procedure

- Refrigerant circuit is completely assembled.
- Refrigerant circuit is completely evacuated.
- If possible, evacuate the refrigerant circuit. Refer to ≥ "3.4 Refrigerant Circuit, Evacuating", page 92

Vehicles with electrical A/C compressor



DANGER

Extremely dangerous due to high-voltage.

Electrocution can cause death or very serious personal injury.

- Have the high-voltage system de-energized by a qualified person.
- De-energize the high-voltage system. Refer to ⇒ Electric Drive; Rep. Gr. 93; High-Voltage System, De-Energizing.

Vehicles with mechanical A/C compressor

Make sure that a vehicle with its refrigerant circuit filled with nitrogen is not started.



(I) NOTICE

Insufficient lubrication for a refrigerant circuit filled with test

There is a risk of damaging the A/C compressor.

- Do not start the vehicle.
- Label the vehicle.

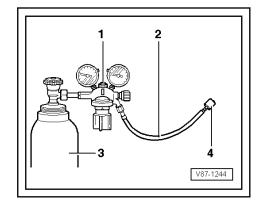
Continuation for all vehicles

- Close the Pressure Reducer . Refer to ⇒ Owner's Manual .
- Raise the refrigerant circuit pressure slowly and in stages (maximum 13.5 bar (195.8 psi)).
- Determine the leak location by searching for noises.
- Drain nitrogen via the Pressure Reducer . Refer to ⇒ Owner's Manual.
- Repair leaks.
- After using nitrogen, evacuate the refrigerant circuit for at least 30min.

2.3.4 Leaks, Finding using Forming Gas

Special tools and workshop equipment required

Pressure Regulator R134A & R1234yf WAS 584 007 art or in whole, is not with respect to the correctness of information in this document. Copyright by AUDI AG.



Gas Leak Detector - VAS 523 003-



Forming Gas Cylinder 95/5, commercially available according to DIN EN ISO 14175

Procedure

- Refrigerant circuit is completely assembled.
- Refrigerant circuit is completely evacuated.
- If possible, evacuate the refrigerant circuit, Refer to semmercial purposes, in part or in whole, is not "3.4 Refrigerant Circuit Exacuating to page 92) AG. AUDI AG does not guarantee or accept any liability rrectness of information in this document. Copyright by AUDI AG

Vehicles with electrical A/C compressor



DANGER

Extremely dangerous due to high-voltage.

Electrocution can cause death or very serious personal injury.

- Have the high-voltage system de-energized by a qualified person.
- De-energize the high-voltage system. Refer to ⇒ Electric Drive; Rep. Gr. 93; High-Voltage System, De-Energizing.

Vehicles with mechanical A/C compressor

Make sure that the A/C compressor, with its refrigerant circuit filled with forming gas is not activated.



Insufficient lubrication for a refrigerant circuit filled with test

There is a risk of damaging the A/C compressor.

- Do not start the vehicle.
- Label the vehicle.

Continuation for all vehicles

- Fill the refrigerant circuit using the Pressure Regulator R134A & R1234yf - VAS 584 007- slowly and in stages with forming gas (maximum of 13.5 bar (195.8 psi)). Refer to ⇒ Owner's Manual .
- Search the refrigerant circuit using the Gas Leak Detector -VAS 523 003- .
- Search all connection locations and coupling points from all sides.
- To search, slowly move the Gas Leak Detector VAS 523 003- along the refrigerant lines (1 cm/ sec.).

- Searching the evaporator can be done via the vents, for example via the defroster vent. The opening diameter of the vent can be reduced with adhesive tape, for better detection.
- Drain the forming gas via the Pressure Regulator R134A & R1234yf - VAS 584 007- . Refer to ⇒ Owner's Manual .
- Repair leaks.
- After using forming gas, evacuate the refrigerant circuit for at least 30 min.

2.3.5 Leaks, Determining using Electronic Leak Detector

Special tools and workshop equipment required

◆ Leak Detector - VAS 584 001- or commercially available



This procedure can only be used if the refrigerant circuit is filled or partially filled. If the refrigerant circuit is drained completely because of the leakage, then it must not be filled. In that case, find the leaks with other means. Refer to Refer to \$\infty\$ "2.3 Leaks, Finding", page 28.

Procedure

Vehicles with High-Voltage System

- Deactivate the "parking air conditioner". Refer to ⇒ Owner's Manual.
- Switch off the ignition.

Continuation for all vehicles

- Start the Leak Detector VAS 584 001- . Refer to ⇒ Owner's Manual.
- Check possible leak locations from all sides using the Leak Detector - VAS 584 001- .
- Depending on the type of leak detector, leak detection is indicated by an increase in clicking rate or a wailing tone. Refer to the ⇒ Owner's Manual .

Refrigerant will evaporate quickly because of to air movement. Drafts must therefore be avoided during leak detec-

Leaks, Determining with UV Leak De-2.3.6 Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted **tection** is **System**3. AUDI AG does not guarantee or accept any liability ormation in this document. Copyright by AUDI AG.

Special tools and workshop equipment required

Leak Detection System - VAS 6201- or commercially availa-



- Leak Detection Additive (depending on the required refrigerant oil). Refer to the ⇒ Electronic Parts Catalog (ETKA).
- A/C Service Station with a possibility to add UV leak detection additive
- Add UV leak detection additive to the refrigerant circuit using the A/C Service Station . Refer to ⇒ page 33 .
- ◆ Leaks, Finding with UV-Lamp. Refer to ⇒ page 34.
- If there is a leak in the refrigerant circuit, refrigerant oil is oftentimes escaping together with the refrigerant. To make the oil become visible under UV light, Leak Detection Additive must be filled into the refrigerant circuit.
- Leaks which only occur when the A/C compressor is running can be detected using UV leak detection.
- ♠ A/C system must be operated for at least 60 minutes so that the additive distributes itself in the entire refrigerant circuit.
- The Leak Detection Additive can be added directly to the open circuit, or after draining the circuit, using the A/C Service Station ⇒ Owner's Manual .

Add UV leak detection additive to the refrigerant circuit, using the A/C Service Station.

- Vacuum test successfully completed. Refer to ⇒ "3.4 Refrigerant Circuit, Evacuating", page 92.
- Fill the refrigerant circuit with Leak Detection Additive and refrigerant, following the instructions. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94 and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities, ⇒ Electronic Parts Catalog (ET-KA).

Quantities for UV Leak Detection Additive:

- The quantity of UV leak detection additive is depending mercial purposes, in part or in whole, is not on the specified quantity of refrigerant oil required for the does not guarantee or accept any liability refrigerant circuit. Refer to ⇒ Heating, Ventulation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities .
- Refrigerant circuits with a specified capacity of refrigerant oil < 150cm³: 3.0 ±0.5 ml
- ♦ Refrigerant circuits with a higher specified quantity of refrigerant oil. Example 250cm³: 5.0 ±0.5 ml
- ◆ If UV leak detection additive was filled already in a refrigerant circuit for an earlier repair, note the following: only add new UV leak detection additive if the refrigerant oil will be replaced. If only a portion of the refrigerant oil was replaced, only add a proportionate amount of the UV leak detection additive. For example, if 50 ml of refrigerant oil was replaced in a vehicle with 150 ml, then only 1.0 ml (cm3) of UV leak detection additive is allowed to be added.

Tip

When filling the Leak Detection Additive using a A/C Service Station, the capacity to be set may differ. Refer to ⇒ Owner's Manual.

After filling the Leak Detection Additive, mark the refrigerant

circuit using the Sticker - VAS 6201/7-. Clean the service connections and their surroundings from remains of the Leak Detection Additive . For this, use ab-

sorbent paper and Cleaning Solution - VAS 6201/3-. Check for Leaks on the Refrigerant Circuit Using UV Lamp.

- A/C system must have been operated for a minimum of 60 minutes so that the additive distributes itself in the entire refrigerant circuit (compressor must be running). Depending on the size of a leak, it may already become visible within that time.
- Move the vehicle into a slightly darker area of the workshop (with daylight or bright lighting the effect of the UV light is diminished).



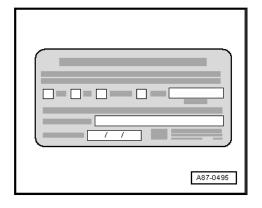
CAUTION

Risk or photokeratitis to the eyes by UV light.

- Wear protective eyewear.
- Never look into the UV lamp.
- Never point the UV lamp at another person.
- Examine the refrigerant circuit components with UV light. Locations where UV leak detection additive has leaked out will light up under UV light (they are fluorescent).

Tip

- Depending on the size and location of the leak, it can take several days until enough refrigerant oil with UV leak detection additive flows out to clearly determine the leaking area.
- Certain materials and their connections (for example, oxidation products on aluminum components, corrosion protection wax) also light up under UV-light.
- With leaks on the evaporator, leak detection additive is pos-is not sibly washed off with condensation and flows out via the any liability condensation water drain. Since the evaporator is not easily accessible on most vehicles, checking the evaporator drain may indicate if the evaporator is leaking. However, it is necessary for this purpose that the additive has already been in the refrigerant circuit for a long period of time (for example, a few days).
- Only a little refrigerant oil will get to certain locations in the refrigerant circuit when the A/C system is being used (for example, on the top cover of the receiver/dryer attached to the condenser). If there is a leak at these locations, then it may possibly take a longer time until enough refrigerant with refrigerant oil and additive leaks at this location. It may be useful to use an electronic leak detector at these locations to find a leak. Refer to Refer to ⇒ "2.3.5 Leaks, Determining using Electronic Leak Detector", page 32.





2.4 Components, Replacing

- ⇒ "2.4.1 Leaking or Damaged Components, Replacing, Empty Refrigerant Circuit except A/C Compressor and Receiver/Dryer", page 35
- ⇒ "2.4.2 Leaking or Damaged Components, Replacing, Filled Refrigerant Circuit except A/C Compressor and Receiver/Dryer", page 36
- ⇒ "2.4.3 A/C Compressor, Replacing without Needing to Clean Refrigerant Circuit", page 37
- ⇒ "2.4.4 A/C Compressor, Replacing due to Leaking or Internal Damage", page 39
- ⇒ "2.4.5 Dryer Cartridge / Receiver/Dryer, Replacing after Cleaning Refrigerant Circuit", page 40
- ⇒ "2.4.6 Receiver/Dryer, Replacing, without Cleaning Refrigerant Circuit", page 41
- ⇒ "2.4.7 Dryer Cartridge/Desiccant Bag, Replacing, without Cleaning Refrigerant Circuit", page 41
- ⇒ "2.4.8 A/C Compressor Regulator Valve N280, Removing and Installing, and Replacing", page 42
- 2.4.1 Leaking or Damaged Components, Replacing, Empty Refrigerant Circuit except A/C Compressor and Receiver/Dryer
- If there is only a small leakage (micro leakage) and the refrigerant is leaking over a long time period, but very slowly, then moisture penetration is unlikely and thus can be neglected. The refrigerant circuit does not need to be cleaned in this case. Refer to Refer to ⇒ "2.4.2 Leaking or Damaged Components, Replacing, Filled Refrigerant Circuit except A/C Compressor and Receiver/Dryer", page 36.
- rrotected by copyright. Copyright private or commercial purposes, in part of it whole, is not If the leakage is larger and refrigerant oil leaked out, then the moisture penetration into the refrigerant circuit is high. In this case the refrigerant circuit must be cleaned.
- If there is a large leakage through which an unknown amount of refrigerant oil leaked out, then the refrigerant circuit must be cleaned.
- If the refrigerant circuit was open for a longer period of time and moisture was able to penetrate, then the refrigerant circuit must be cleaned.

Procedure

The refrigerant circuit is completely empty (for example with larger leaks or cracked hose line)

Procedure

- Remove the faulty component. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Refer to ⇒ "2.5 Refrigerant Circuit, Cleaning", page 44.

Electrically-Driven A/C Compressor

- Drain all refrigerant oil from the A/C compressor, for this, clean the A/C compressor. Refer to Refer to ⇒ "2.7 Main Wiring Diagram, Electrically-Driven A/C Compressor, Clean-
- Fill the entire amount of refrigerant oil (unused refrigerant oil) intended for the refrigerant circuit via the high and low pres-

sure connection of the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities .

Mechanically Driven A/C Compressor

- Remove the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Installing.
- Remove the oil drain plug -2-.

Tip

- The design of the oil drain plug -2- and the seal -3- is different, depending on the manufacturer. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor.
- Pay attention to the tightening specifications of the oil drain plug -2-.
- Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; Overview - A/C Compressor.
- If the tightening specification for the oil drain plug is not given in the overview - A/C compressor: "Denso": 30 Nm
- If the tightening specification for the oil drain plug is not given in the overview - A/C compressor: "Delphi": 15 Nm
- If the tightening specification for the oil drain plug is not given in the overview - A/C compressor: "Sanden"/ "Zexel-/ Valeo-": 10 Nm
- If the oil drain plug seal is not available as a replacement part, then the removed seals may be reused, as an exception. Check for damage before installing.
- After charging the refrigerant circuit, check the installed oil drain plug for leaks. Refer to Refer to \Rightarrow "2.3.5 Leaks, Determining using Flortronia Lock Potential" page 32 mining using Electronic Leak Detector", page 32
- Pour out the used refrigerant oil from the A/C compressor. For best results when draining the A/C compressor, turn the belt pulley or A/C clutch plate during the process.
- Fill the entire amount of refrigerant oil (unused refrigerant oil) intended for the refrigerant circuit via the oil drain plug opening of the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities.

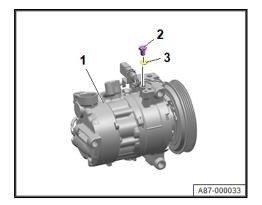
Continuation for all vehicles

- Replace the receiver/dryer. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Assemble the refrigerant circumtected by copyright. Copying for private or commercial purposes, in part or in whole, is not itted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- Charge the refrigerant circuit. Refer to 19 143.5 Refrigerant ation in this document. Copyright by AUDI AG. Circuit, Charging", page 94.

Tightening Specifications

Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; Overview - A/C Compressor.

2.4.2 Leaking or Damaged Components, Replacing, Filled Refrigerant Circuit





except A/C Compressor and Receiver/Dryer

Refrigerant circuit still contains refrigerant (for example, with minor leak)

Procedure

Discharge the refrigerant circuit. Refer to ⇒ "3.3 Refrigerant Circuit, Discharging", page 90.

Evaporator, Replacing

- Remove the evaporator. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Front Heater and A/C Unit; Evaporator, Removing and Installing.
- Make up for the amount of refrigerant oil in the old evaporator. To do this, add 30 ml of refrigerant oil when charging the refrigerant circuit.

Condenser, Replacing

- Replace the condenser. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Condenser, Removing and Installing.
- Make up for the amount of refrigerant oil in the old condenser. To do this, add 10 ml of refrigerant oil when charging the refrigerant circuit.

Heat Exchanger, Replacing (for example: High-Voltage Battery Heat Exchanger, Heat Condenser)

- Replace the component. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Add 10 ml of fresh refrigerant oil per component when charging.

Refrigerant Lines, Replacing

Remove the refrigerant/line and collect leaking refrigerantary liability

private or commercial purposes, in part or in whole, is not

When charging the refrigerant circuit, add the collected amount of refrigerant oil. For line sections of more than 50 cm add an additional 5 ml refrigerant oil.

Other Components, Replacing

Remove and replace the faulty component. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

Continuation for all components

Charge the refrigerant circuit and at the same time add the necessary amount of refrigerant oil. Refer to Refer to > "3.5 Refrigerant Circuit, Charging", page 94

2.4.3 A/C Compressor, Replacing without Needing to Clean Refrigerant Circuit

Special tools and workshop equipment required

Digital Scale - VAS 231 007- or commercially available



- A/C Service Station
- This procedure is used, for example, with an external damage of the A/C compressor or an electric fault at the electrical A/C compressor.
- If there is no capacity information on the new A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities.

Procedure Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

- Remove the A Green pressor Refer to the Heating Ventilant by AUDI AG. tion and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Installing.
- Compare the type of refrigerant oil from the old and the new A/C compressor.
- If there are different types of refrigerant oil, then remove the refrigerant oil from the refrigerant circuit. In this case use the following procedure for replacing the A/C compressor. Refer to Refer to ⇒ "2.4.4 A/C Compressor, Replacing due to Leaking or Internal Damage", page 39

Electric A/C Compressor

- Determine the amount of refrigerant oil in the A/C compressor which is to be replaced (oil capacity 1) as follows:
- Drain the old refrigerant oil from the A/C compressor via both connections into a clean container. To ensure the best possible drainage, move the A/C compressor in a circular motion when draining.
- Weigh the collected refrigerant oil using the Digital Scale -VAS 231 007- .
- Remove any refrigerant oil still in the old A/C compressor. to do this, clean the A/C compressor. Refer to Refer to ⇒ 2.7 Main Wiring Diagram, Electrically-Driven A/C Compressor, Cleaning", page 52.
- Determine the amount of oil 1, for this, combine the weight of the drained and cleaned refrigerant oil.
- For 1 cm³ refrigerant oil a weight of 1 g (0 oz) is presumed.
- Check the drained refrigerant oil for discoloration and shav-
- If a discoloration is determined (dark gray to black discoloration or shavings), then clean the refrigerant circuit and the A/C compressor. Refer to Refer to \Rightarrow "2.4.4 A/C Compressor, Replacing due to Leaking or Internal Damage", page 39



- Determine the refrigerant oil quantity to be removed from the new A/C compressor (oil quantity 2), as follows:
- Oil quantity 2 = oil quantity new A/C Compressor label oil quantity 1
- Drain the refrigerant oil not needed from the new A/C compressor (oil quantity 2) via the low-pressure and high-pressure connection.
- For example: If a total of 60 cm³ refrigerant oil was removed from the faulty A/C compressor and the label of the new A/C compressor specifies a quantity of 200 cm³, then 140 cm³ refrigerant oil must be drained from the new A/C compressor.

Mechanically Driven A/C Compressor

- Drain the refrigerant oil from the faulty A/C compressor and measure the quantity.
- Remove the oil drain plug from the A/C compressor. Refer to ⇒ "2.4.1 Leaking or Damaged Components, Replacing, Empty Refrigerant Circuit except A/C Compressor and Receiver/Dryer", page 35
- To accelerate drainage of refrigerant oil, rotate the A/C compressor by way of clutch plate of A/C clutch, for example.
- Remove the oil drain plug from the new A/C compressor and drain the refrigerant oil into a clean container. Refer to Refer to ⇒ "2.4.1 Leaking or Damaged Components, Replacing, Empty Refrigerant Circuit except A/C Compressor and Receiver/Dryer", page 35
- Fill with the new refrigerant oil via the opening of the oil drain plug again. The quantity equals the quantity removed from the faulty A/C compressor.

Tip

- For example: If a quantity of 40 cm³ refrigerant oil was removed from the faulty A/C compressor and 100 cm³ was removed from the new compressor, then a quantity of 40 cm³ refrigerant oil must be filled into the new A/C compressor. (The quantity of refrigerant oil removed from the new A/C compressor may be used).
- After charging the refrigerant circuit check the installed oil purposes, in part or in whole, is not drain plug for leaks. Refer to Refer to 2.3.5 Leaks Deter guarantee or accept any liability nis document. Copyright by AUDI AG mining using Electronic Leak Detector page 32at

Continuation for all vehicles

- Assemble the refrigerant circuit.
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94
- Start the A/C compressor. For this, perform the "Compressor cut-in, basic setting" function using the ⇒ Vehicle diagnostic tester.

2.4.4 A/C Compressor, Replacing due to **Leaking or Internal Damage**

- This procedure is used, for example, because of noises from the A/C compressor, lack of performance of the A/C compressor or for leaks in which an undefined quantity of refrigerant oil drained from the A/C compressor.
- If the leak of refrigerant is only at the A/C compressor, then it can be replaced without flushing the refrigerant circuit. Refer



to ⇒ "2.4.3 A/C Compressor, Replacing without Needing to Clean Refrigerant Circuit", page 37

Procedure

Remove the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Installing.

Electric A/C Compressor

Drain the refrigerant oil from the faulty A/C compressor into a clean container.

Mechanically Driven A/C Compressor

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Drain the refrigerant oil of the faulty A/C compressor regardited unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability the oil drain plus into a little representation of the faulty A/C compressor regarding the respect to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the faulty A/C compressor regarding to the control of the contr respect to the correctness of information in this document. Copyright by AUDI AG. the oil drain plug into a clean container. Refer to Refer to ⇒ "2.4.1 Leaking or Damaged Components, Replacing, Empty Refrigerant Circuit except A/C Compressor and Receiver/Dryer", page 35.

Continuation for all vehicles

- Check the refrigerant oil for discoloration and shavings.
- If no discoloration is determined (dark gray to black discoloration or shavings), then replace the A/Č compressor without cleaning the refrigerant circuit. Refer to Refer to ⇒ "2.4.3 A/C" Compressor, Replacing without Needing to Clean Refrigerant Circuit", page 37
- Refer to ⇒ "2.5 Refrigerant Circuit, Cleaning", page 44.
- Make sure that the quantity of refrigerant oil in the A/C compressor is sufficient, to reach the quantity of refrigerant oil needed in the refrigerant circuit. Especially for vehicles with auxiliary elements (for example a second evaporator) it may be necessary to fill additional refrigerant oil. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities .
- If additional refrigerant oil is necessary, then add it when filling the refrigerant oil.
- Install the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Installing.
- Replace the expansion valve. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Expansion Valve, Removing and Installing.
- Depending on the vehicle it is necessary to replace other components after replacing the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Instal-
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94
- Start the A/C compressor. For this, perform the "Compressor cut-in, basic setting" function using the > Vehicle diagnostic tester.

2.4.5 Dryer Cartridge / Receiver/Dryer, Replacing after Cleaning Refrigerant Circuit

- Refrigerant circuit has been cleaned.
- Depending on the design of the refrigerant circuit, a receiver/dryer (with drying element) or a desiccant bag/cartridge is





installed. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Procedure

Replace the desiccant bag/dryer cartridge (or receiver/dryer). Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

Receiver/Dryer, Replacing, without 2.4.6 Cleaning Refrigerant Circuit oses, in part or in whole, is not

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Digital Scale - VAS 231 007- or commercially available



- A/C Service Station
- A dryer element is often installed into the receiver/dryer, which cannot be replaced separately (depending on the design of the refrigerant circuit). Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Procedure

- Discharge the refrigerant circuit. Refer to ⇒ "3.3 Refrigerant Circuit, Discharging", page 90.
- Remove the receiver/dryer. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Remove the dirt from the receiver/dryer.
- Weigh the removed receiver/dryer using the Digital Scale -VAS 231 007- .
- Add refrigerant oil to the new receiver/dryer until it is the same weight as the receiver/dryer that was removed.
- Install the receiver/dryer. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94

2.4.7 Dryer Cartridge/Desiccant Bag, Replacing, without Cleaning Refrigerant Circuit

The dryer cartridge/desiccant bag are usually installed in the receiver/dryer depending on the design of the refrigerant circuit. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Procedure

Discharge the refrigerant circuit. Refer to ⇒ "3.3 Refrigerant Circuit, Discharging", page 90.

Replace the dryer cartridge/desiccant bag. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Desiccant Bag/Dryer Cartridge, Removing and Installing .

Tip

If the dryer cartridge/the desiccant bag is securely installed in a component (for example, in the receiver/dryer on the condenser) and it cannot be replaced separately, then replace the receiver/dryer or condenser.

2.4.8 A/C Compressor Regulator Valve -N280-, Removing and Installing, and Replacing

Removing

Depending on the vehicle and the location of the A/C compressor, remove the components that block access to the A/C Compressor Regulator Valve - N280- . Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

Vehicles with a regulator valve that cannot be accessed when the A/C compressor is installed

Remove the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Installing.

Vehicles with a regulator valve that can be accessed when the A/C compressor is installed

Discharge the refrigerant circuit. Refer to \Rightarrow "3.3 Refrigerant Circuit, Discharging", page 90

CAUTION

Danger of frostbite due to refrigerant coming out under pressure.

Frostbite on the skin and other parts of the body is possible.

- Wear safety gloves.
- Wear protective eyewear.
- Extract refrigerant and open the refrigerant circuit immedi-
- If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Evaporation can cause pressure to develop in the refrigerant circuit.
- Remove a refrigerant line from the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; Refrigerant Lines on the A/C Compressor, Removing and Installing.

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Continuation for all vehicles

Disconnect the connector to the regulator valve -B-.

Tip

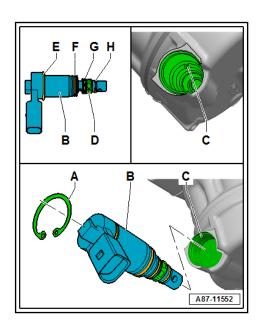
- Depending on the design of the A/C compressor, the A/C Compressor Regulator Valve A/C Compressor Regulator Valve - N280- may be equipped with a short wiring harness.
- ♦ If the A/C compressor has A/C clutches and a shared connection for the A/C Compressor Regulator Valve A/C Compressor Regulator Valve ote N280 cop disconnect, the awires to ercial purpos the regulator valve from the connector rised by AUDI AG. AUDI AG does not gui e correctness of information in this documen
- Clean the A/C compressor in the area of the A/C Compressor Regulator Valve A/C Compressor Regulator Valve -N280- -B-.
- Remove the circlip -A-.
- Remove the A/C Compressor Regulator Valve A/C Compressor Regulator Valve - N280- -B-.
- Check the A/C Compressor Regulator Valve A/C Compressor Regulator Valve - N280- -B- and the mount in the A/C compressor -C- for dirt.
- If the screen -D- or the mount in the A/C compressor -C- is extremely dirty (for example, if there are shavings or there is dark, sticky grit), this indicates that the A/C compressor is damaged. In this case, clean the refrigerant circuit and replace the A/C compressor. Refer to Refer to ⇒ "2.4.4 A/C Compressor, Replacing due to Leaking or Internal Damage", page 39

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Installing

Install in the reverse order of removal, while noting the following:

- Clean the A/C compressor mount -C- thoroughly, using a clean, lint-free cloth.
- Check the A/C compressor mount -C- for damage (also look for small scratches on the surface).
- Replace the A/C compressor if damaged
- Check the seals -E-, -F-, -G- and -H- for damage and correct seating.
- Insert the A/C Compressor Regulator Valve A/C Compressor Regulator Valve - N280- -B- all the way into the A/C compressor mount -C-.
- Install the circlip -A-.
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94.



Αυδι

2.5 Refrigerant Circuit, Cleaning

⇒ "2.5.1 General Information for Cleaning Refrigerant Circuit", page 44

⇒ "2.5.2 Preliminary Work to Clean Refrigerant Circuit (Flushing with Refrigerant R1234yf)", page 44

⇒ "2.5.3 Refrigerant Circuit Cleaning Process", page 45

2.5.1 General Information for Cleaning Refrigerant Circuit

- The refrigerant circuit must be cleaned in order to be able to remove moisture and other contaminants (e.g. abraded material from a defective A/C compressor) as well as old refrigerant oil as efficiently as possible, without wasting refrigerant, without the need for extensive assembly work and without contaminating the environment.
- Vehicle-specific, certain components must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Refrigerant Circuit, Cleaning or Refer to ⇒ "2.8 Adapter for Assembling the page 54

Clean the refrigerant circuit if the following apply (flushing):

- When there is dirt or other contamination in the refrigerant circuit.
- When the refrigerant circuit has been left open for longer than normal (for example, after a collision).
- When it is not clear how much refrigerant oil is in the refrigerant circuit.
- When it is not clear which type of refrigerant oil was used
- If the A/C compressor had to be replaced due to internal damage (for example, noise or no output). Refer to Refer to "2.4 Components, Replacing", page 35
- When it is stipulated by the vehicle-specific repair manual following the replacement of certain components.

Preliminary Work to Clean Refriger-2.5.2 ant Circuit (Flushing with Refrigerant R1234yf)

Special tools and workshop equipment required

- vate or commercial purposes, in part or in whole, is not A/C Service Station with flushing device AUDI AG. AUDI AG does not guarantee or accept any liability
- Refrigerant Circuits Adapter Set 1 VAS 6338/1-
- If a vehicle-specific description is available for cleaning the refrigerant circuit, then refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Pay attention to the main wiring diagram for cleaning, which is vehicle-specific and depending on vehicle equipment. Refer to Refer to ⇒ "2.6 Main Wiring Diagram for Cleaning the Refrigerant Circuit", page 46

Preliminary Work

Remove the A/C compressor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; A/C Compressor; A/C Compressor, Removing and Installing.



Vehicles with Reservoir/Receiver/Dryer

- Remove the reservoir/receiver/dryer. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .
- Connect the refrigerant lines to the reservoir/receiver/dryer. Refer to Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

Vehicles with Desiccant Bag/Dryer Cartridge

Remove the desiccant bag/dryer cartridge and the screen if equipped. Close the receiver/dryer again. Refer to > Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Desiccant Bag/Dryer Cartridge, Removing and Installing .

Vehicles with Expansion Valve

Remove the expansion valve and replace with an adapter. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Expansion Valve, Removing and Installing and Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

Vehicle with Two Evaporators

Disconnect the second evaporator from the refrigerant circuit of the first evaporator and flush in a separate work procedure. Refer to Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54 and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Vehicles with High-Voltage System (without Additional A/C System Functions)

Install further adapters to flush the refrigerant circuit. Refer to Refer to > "2.8 Adapter for Assembling the Flushing Circuits", page 54 Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not

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If a vehicle-specific description is available for cleaning the refrigerant circuit, then it must be performed. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

Procedure

- Perform preliminary work for flushing the refrigerant circuit. Refer to Refer to ⇒ "2.5.2 Preliminary Work to Clean Refrigerant Circuit (Flushing with Refrigerant R1234yf)", page 44.
- If the refrigerant circuit must be cleaned in several sections. then connect the refrigerant circuit according to the main wiring diagram and clean the sections one after the other in the specified order. Refer to Refer to ⇒ "2.6 Main Wiring Diagram for Cleaning the Refrigerant Circuit", page 46.
- Refer to ⇒ "3.11 Refrigerant Circuit, Cleaning", page 97.
- The following components must be replaced after completely cleaning the refrigerant circuit, depending on the design of the refrigerant circuit. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Reservoir
- Receiver/Dryer
- Desiccant Bag/Dryer Cartridge in the Receiver/Dryer
- Replace additional components after flushing, specific to complaint and vehicle. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Refriger-

ant Circuit, Cleaning or Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54.

- Examine expansion valve for dirt or corrosion; replace if necessary.
- Perform an adaption of the refrigerant oil amount in the refrigerant circuit, depending on the complaint. Refer to Refer to ⇒ "2.4 Components, Replacing", page 35 and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities .
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94.
- A/C System, Starting according to guidelines. Refer to ⇒ '3.6 A/C System, Operating after Charging", page 95.

2.6 Main Wiring Diagram for Cleaning the Refrigerant Circuit

⇒ "2.6.1 Main Wiring Diagram for Cleaning (Flushing), Refrigerant Circuit with Expansion Valve and Receiver/Dryer", page 46

⇒ "2.6.2 Connection Diagram for Cleaning (Flushing), Refrigerant Circuit with Restrictor and Container (without High-Voltage System)", page 48

⇒ "2.6.3 Connection Diagram for Cleaning (Flushing), Vehicles with High-Voltage System (without Additional A/C System Functions)", page 51

⇒ "2.6.4 Connection Diagram for Cleaning (Flushing), Vehicles with High-Voltage System (with Additional A/C System Functions such as Heat Pump Operation)", page 52

Main Wiring Diagram for Cleaning 2.6.1 (Flushing), Refrigerant Circuit with Expansion Valve and Receiver/Dryer

- With 1 or 2 evaporators
- Without or with high-voltage system
- During flushing, the refrigerant flows in the opposite direction than during A/C system operation, therefore the high pressure side of the A/C Service Station is connected to the low pressure connection of the refrigerant circuit leading to the A/C compressor.
- For vehicles with two evaporators, the refrigerant circuit to the second evaporator must be disconnected from the refrigerant circuit of the first evaporator and must be flushed via a separate work procedure. Refer to Refer to Separate work procedure. Refer to Refer to Refer to Separate work procedure. for Assembling the Flushing Circuit
- For vehicles with an evaporator and a heat exchanger, disconnect the circuit to the heat exchanger via manual shutoff valves from the circuit of the first evaporator and to be flushed in a separate work process. Refer to Refer to "2.8 Adapter for Assembling the Flushing Circuits", page
- The arrows indicate the refrigerant flow direction during cleaning.
- The main wiring diagram shows a refrigerant circuit with expansion valve, receiver/dryer and second evaporator (optional equipment on certain vehicles).



1 - A/C Service Station

2 - Refrigerant Hose for A/C Service Station

☐ From the high pressure side of the A/C Service Station (most often colored red) to the low pressure side connection of the A/C compressor on refrigerant circuit (larger diameter).

3 - Adapter to Connection for Low Pressure Side on Refrigerant Circuit

- □ Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page
- Use the Refrigerant Circuits Adapter Set - Adapter 48 - VAS 6338/48- between the refrigerant hose -2- and the adapter -3-.
- depending on the version of the adapter, an additional adapter is necessary to connect the A/C Service Station filling hose.

4 - Low Pressure Side Connection on Refrigerant Circuit

Connect to ⇒ Item 3 (page 47)

5 - Adapter for Removed Expansion Valve

Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

6 - Evaporator

7 - Connection to Receiver/Dryer

- ☐ Installed depending on the vehicle
- Not present on vehicles with a dryer cartridge in the receiver/dryer on the condenser or with a receiver/dryer installed in the condenser. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- □ Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

8 - Adapter for Bridging Removed Receiver/Dryer

- Necessary depending on the vehicle
- □ Refer to ⇒ "2.8 Adapter for Assembling, the Elushing, Circuits", page 54 es, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not quarantee or accept any liability

9 - Filler Hose

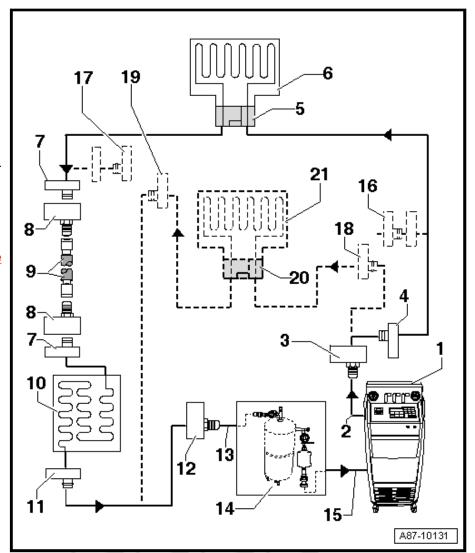
For example, Filler Hose from Refrigerant Circuits Adapter Set 1 - VAS 6338/1- . Refer to ⇒ 2.8 Adapter for Assembling the Flushing Circuits", page 54.

10 - Condenser

☐ If the receiver/dryer is attached directly to the condenser, the receiver/dryer must be removed and replaced only after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).

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☐ If a receiver/dryer with dryer cartridge is installed on the condenser, the dryer cartridge must be removed (reseal the receiver/dryer at or in the condenser after removing). Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).



δυδι	Refrigerant R1234yf Servicing - Edition 07.2024
1	On certain vehicles the receiver/dryer is integrated inside the condenser and the dryer cartridge cannot be replaced separately and is not available as a single part. In this case, the condenser with receiver/dryer/dryer cartridge must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
11 - Hi	gh Pressure Side Connection on Refrigerant Circuit
	Connect to ⇒ Item 12 (page 48)
12 - Ad	dapter to Connection for High-Pressure Side on Refrigerant Circuit
	Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54
13 - CI	narging Hose for Refrigerant Circuit Flushing Device
	From the connection to the high pressure side of the A/C compressor on the refrigerant circuit (smaller diameter) to the input of the flushing device.
14 - FI	ushing Device
	Different versions and design
	With filter, viewing glass, safety valve, heater, refrigerant reservoir, etc. (depending on version).
	Depending on the construction of the A/C Service Station and of refrigerant circuit flushing device, a check valve may be installed at the output of the refrigerant circuit flushing device (to guarantee correct direction of refrigerant flow during flushing).
	depending on the flushing device, a 5/8 -18 UNF external thread, a connection for a R134a or a R1234yf high pressure service coupling can be present on the output for the A/C Service Station .
;	on flushing devices with a 5/8 -18 UNF external thread or a connection for a R134a low pressure side service connection an additional adapter is necessary to connect the R1234yf low pressure side service connection or a filler hose to the A/C Service Station (with a M12 x 1.5-6G external thread according to SAE J639) to the output of the flushing device.
,	The filler hose from the A/C Service Station has a M12 x 1.5-6G external thread according to SAE J639. On the flushing device for the refrigerant circuit there can be a service connection for a low pressure side service connection according to SAE J639 for the refrigerant R1234yf, a M12 x 1.5-6G inner thread according to SAE J639, a service connection for a R134a low pressure side service connection or a 5/8 -18 UNF external thread depending on the version. So that both components can be connected an additional adapter may be necessary.
15 - Re	efrigerant Hose for A/C Service Station
	from the low pressure side of the A/C Service Station (most often blue colored) to the output of the flushing device.
16 - Ad	dapter for Sealing Outlet to Second Evaporator
	Necessary depending on vehicle equipment. Refer to <u>⇒ "2.8 Adapter for Assembling the Flushing</u> Circuits", page 54
	dapter for Sealing Outlet to Second Evaporator
!	Necessary depending on vehicle equipment. Refer to <u>⇒ "2.8 Adapter for Assembling the Flushing</u> Circuits", page 54 .
	ow Pressure Side Connection on Refrigerant Circuit to Second Evaporator
	Necessary depending on vehicle equipment. Refer to <u>⇒ "2.8 Adapter for Assembling the Flushing</u> Circuits", page 54.
	gh Pressure Side Connection on Refrigerant Circuit to Second Evaporator
	Necessary depending on vehicle equipment Refere to with Adapter for Assembling the Flushing permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
	dapter for Removed Expansion Valve on Second Evaporator
!	Necessary depending on vehicle equipment. Refer to <u>⇒ "2.8 Adapter for Assembling the Flushing</u> Circuits", page 54
	econd Evaporator
	Installed depending on vehicle equipment
2.6.2	
	(Flushing), Refrigerant Circuit with Re-

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strictor and Container (without High-Voltage System)

- The restrictor and the reservoir must be removed for flushing. Refer to Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54.
- ♦ Currently this assembly with restrictor and refrigerant circuit restrictor is currently not installed.
- During flushing, the refrigerant flows in the opposite direction than during A/C system operation, therefore the high pressure side of the A/C Service Station is connected to the low pressure connection of the refrigerant circuit leading to the A/C compressor.
- The arrows indicate the refrigerant/flow/direction⁴during⁴UDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. cleaning.
- The main wiring diagram shows a refrigerant circuit with expansion valve, receiver/dryer and second evaporator (optional equipment on certain vehicles).

2 - Refrigerant Hose for A/C Service Station

1 - A/C Service Station

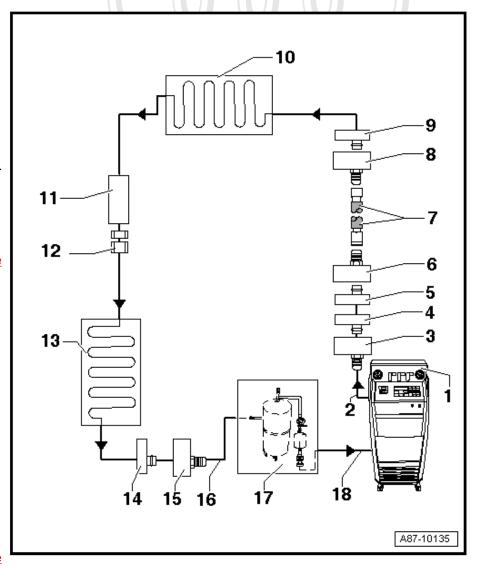
From the high pressure side of the A/C Service Station (most often colored red) to the low pressure side connection of the A/C compressor on refrigerant circuit (larger diameter).

3 - Adapter to Connection for Low Pressure Side on Refrigerant Circuit

- □ Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page
- ☐ Use the Refrigerant Circuits Adapter Set - Adapter 48 - VAS 6338/48- between the refrigerant hose -2- and the adapter -3-.
- depending on the version of the adapter, an additional adapter is necessary to connect the A/C Service Station filling hose.

4 - Low Pressure Side Connection on Refrigerant Circuit

- Connect to ⇒ Item 3 (page 50)
- Refer to ⇒ "2.8 Adapt- er for Assembling the Flushing Circuits", page



On the refrigerant line from the A/C compressor to the reservoir

5 - Connection to Reservoir

- □ Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54
- ☐ On the refrigerant line from the A/C compressor to the reservoir

6 - Adapter for Bridging Removed Reservoir

Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

7 - Filler Hose

□ For example, Filler Hose from Refrigerant Circuits Adapter Set 1 - VAS 6338/1-. Refer to ⇒ <u>'2.8 Adapter for Assembling the Flushing Circuits", page 54</u> .

8 - Adapter for Bridging Removed Reservoir

Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

9 - Connection to Reservoir

Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

10 - Evaporator

11 - Restrictor Component Location

- ☐ The restrictor must be removed for flushing
- □ Remove the restrictor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

12 - Refrigerant Line Threaded Connection

Bolt together again after removing the restrictor. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

13 - Condenser

14 - High Pressure Side Connection on Refrigerant Circuit

Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

15 - Adapter to Connection for High Pressure Side on Refrigerant Circuit

Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54

16 - Charging Hose for Refrigerant Circuit Flushing Device

☐ From the connection to the high pressure side of the A/C compressor on the refrigerant circuit (smaller diameter) to the input of the flushing device.

17 - Flushing Device

- Different versions and design
- ☐ With filter, viewing glass, safety valve, heater, refrigerant reservoir, etc. (depending on version).
- Depending on the construction of the A/C Service Station and of refrigerant circuit flushing device, a check valve may be installed at the output of the refrigerant circuit flushing device (to guarantee correct direction of refrigerant flow during flushing).
- Depending on the flushing device a 5/8 -18 UNF external thread a connection for a R134a or a R1234yf high pressure service coupling can be present on the output for the A/C Service Station .
- on flushing devices with a 5/8 -18 UNF external thread or a connection for a R134a low pressure side service connection an additional adapter is necessary to connect the R1234yf low pressure side service connection or the filler hose to the A/C Service Station (with a M12 x 1.5-6G external thread according to SAE J639) to the output of the flushing device.
- The filler hose from the A/C Service Station has a M12 x 1.5-6G external thread according to SAE J639. On the flushing device for the refrigerant circuit there can be a service connection for a low pressure side service connection according to SAE J639 for the refrigerant R1234yf, a M12 x 1.5-6G inner thread according to SAE J639, a service connection for a R134a low pressure side service connection or a 5/8 -18 UNF external thread depending on the version. So that both components can be connected an additional adapter may be necessary. Refer to the ⇒ Electronic Parts Catalog (ETKA).

18 - Refrigerant Hose for A/C Service Station

from the low pressure side of the A/C Service Station (most often blue colored) to the output of the flushing device.

2.6.3 Connection Diagram for Cleaning (Flushing), Vehicles with High-Voltage System (without Additional A/C System Functions)

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- For vehicles with an evaporator and a heat-exchanger dise. AUDI AG does not guarantee or accept any liability connect the circuit to the heat exchanger via manual shutformation in this document. Copyright by AUDI AG. off valves from the circuit of the first evaporator and to be flushed in a separate work process. Refer to Refer to "2.8 Adapter for Assembling the Flushing Circuits", page
- During the first flushing cycle, the section with the evaporator in the heater and A/C unit is flushed, afterward the section with the high-voltage battery heat exchanger or the evaporator in the battery cooling module is flushed. Refer to Refer to ⇒ "2.8 Adapter for Assembling the Flushing Cir-
- The design of the different flushing circuits for this vehicle is comparable to the design of a vehicle with two evaporators. Refer to Refer to ⇒ "2.6.1 Main Wiring Diagram for Cleaning (Flushing), Refrigerant Circuit with Expansion Valve and Receiver/Dryer", page 46.

- If a vehicle-specific description is available for cleaning the refrigerant circuit, then use it. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- 2.6.4 Connection Diagram for Cleaning (Flushing), Vehicles with High-Voltage System (with Additional A/C System Functions such as Heat Pump Operation)
- The refrigerant circuit is cleaned in multiple flushing cycles. Refer to Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54 and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- To flush, the circuit is divided into multiple sections and then cleaned during one flushing cycle at a time. It is divided by activating the installed electrically activated valves and using the installed manual shut-off valves. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- The design of the respective flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).

2.7 Main Wiring Diagram, Electrically-Driven A/C Compressor, Cleaning



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1 - A/C Service Station

2 - Refrigerant Hose

☐ From the high-pressure side A/C Service Station to the connector for the low-pressure side of the A/C compressor (larger diameter)

3 - Adapter to Connection for Low Pressure Side on A/C Compressor

- There are different versions. Refer to ⇒ 2.8 Adapter for As sembling the Flushing Circuits", page 54.
- □ For example Refrigerant Circuits Adapter Set 1 - Adapter 41 -VAS 6338/41A- from the Refrigerant Circuits Adapter Set 1 - VAS 6338/1-.
- ☐ Use the Refrigerant Circuits Adapter Set - Adapter 48 - VAS 6338/48- between the refrigerant hose -2- and the adapter -3-.

4 - Refrigerant Line

□ To the A/C compressor connection on the adapter ⇒ Item 3 (page

5 - A/C Compressor

☐ A/C compressor is flushed in the flow direction (from the low pressure side input to the high pressure side output)

6 - Refrigerant Line

- \Box To the A/C compressor connection on the adapter \Rightarrow Item 7 (page 53)
- To assemble the flushing circuit, use for example a refrigerant line with the part number 7L6 820 721 BF. Refer to the ⇒ Electronic Parts Catalog (ETKA).

7 - Adapter to Connection for High-Pressure Side on A/C Compressor

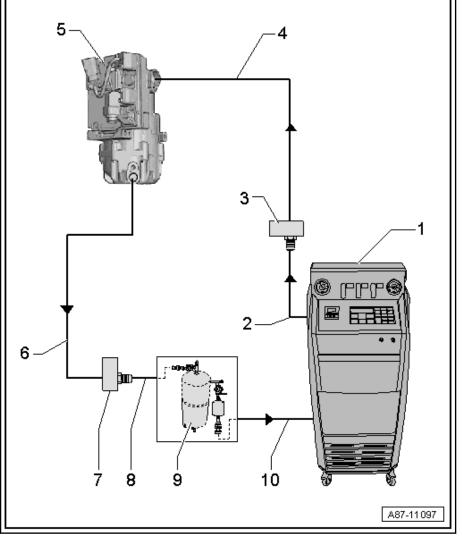
- ☐ There are different versions. Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54.
- For example Refrigerant Circuits Adapter Set 1 Adapter 40 VAS 6338/40A- from the Refrigerant Circuits Adapter Set 1 - VAS 6338/1-.

8 - Filler Hose to the Flushing Device

From the connection to the high pressure side of the A/C compressor on the refrigerant circuit (smaller diameter) to the input of the flushing device.

9 - Refrigerant Circuit Flushing Device

- □ different versions and different design of the Refrigerant Circuit Flushing Device . Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Depending on the design of the A/C Service Station and the flushing device for the refrigerant circuits, a connection for a service coupling can be present on the output and on the input of the flushing device.
- ☐ If a service connection with a valve is installed on the outlet of the flushing device, this valve must be all the way open when the service coupling is attached. A partially opened valve creates a constriction.



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☐ If on the input of the flushing device a connection for a service coupling is present, modify the input so that the refrigerant hose which comes from the vehicle can be directly connected.

10 - Refrigerant Hose for A/C Service Station

☐ From the low-pressure side of the A/C Service Station to the flushing device output

2.8 Adapter for Assembling the Flushing Circuits

⇒ "2.8.1 Adapter for Assembling Flushing Circuits, A1 (8X_) from MY 2017", page 56

⇒ "2.8.2 Adapter for Assembling Flushing Circuits, A1 (GB_) from MY 2019, A3 (8V_/ 85_) from MY 2019, A3 (8V_/ 85

TOM MY 2019, A3 (8V_/83_) ITOM: Mttd20cb/yrA3 (8) Inglittom: MttMcommercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- 2021 ▶, TT (FV_) from MY 2017, Q2 (GA_) from MY 2017, Q3 (F3_) from MY 2019", page 56
- ⇒ "2.8.3 Adapter for Assembling Flushing Circuits, A3 e-tron (8V / 85_) from MY 2013 ▶", page 58
- ⇒ "2.8.4 Adapter for Assembling Flushing Circuits, A3 TFSI e (8Y_) MY 2021 ▶, Q3 TFSI e (F3_) MY 2021 ▶", page 61
- ⇒ "2.8.5 Adapter for Assembling Flushing Circuits, A4 (8K_) from MY 2017", page 63
- ⇒ "2.8.6 Adapter for Assembling Flushing Circuits, A5 Coupe and Sportback (8T_) from MY 2017, Q5 (8R_ / 83_) from MY 2017, A5 Cabriolet (8F_) from MY 2016", page 63
- \Rightarrow "2.8.7 Adapter for Assembling Flushing Circuits, A5 (F5_) from MY 2016, Q5 (FY_) from MY 2017, A4 (8W_) from MY 2017", page 64
- ⇒ "2.8.8 Adapter for Assembling Flushing Circuits, A6 (4G / 4X) from MY 2017, A7 (4G_ oder 4X) from MY 2017", page
- ⇒ "2.8.9 Adapter for Assembling Flushing Circuits, A6 (4A_) from MY 2019, A7 (4K_) from MY 2018", page 65
- ⇒ "2.8.10 Adapter for Assembling Flushing Circuits, A6 TFSI e (4K_) MY 2019 ►, A7 TFSI e (4K_) MY 2019 ►", page 66
- ⇒ "2.8.11 Adapter for Assembling Flushing Circuits, A8 (4H_) from MY 2010", page 68
- ⇒ "2.8.12 Adapter for Assembling Flushing Circuits, A8 (4N_) from MY 2018", page 72
- ⇒ "2.8.13 Adapter for Assembling Flushing Circuits, A8 (4N_) TFSI e from MY 2019", page 75
- "2.8.14 Adapter for Assembling Flushing Circuits, Q3 (8U) 84_) MY 2017 ▶", page 76
- ⇒ "2.8.15 Adapter for Assembling Flushing Circuits, Q4 e-tron (F4_) MY 2022 ▶", page 77 permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- ⇒ "2.8.16 Adapter for Assembling Flushing Circuits, Q5 TFSI e

 (FY_) MY 2019 ▶", page 78
- ⇒ "2.8.17 Adapter for Assembling Flushing Circuits, Q7 (4M_) from MY 2016, Q8 (4M_) from MY 2018", page 79
- ⇒ "2.8.18 Adapter for Assembling Flushing Circuits, Q7 (4M_) e-tron from MY 2017, Q7 TFSI e (4M_), Q8 TFSI e (4M_)", page 82
- ⇒ "2.8.19 Adapter for Assembling Flushing Circuits, R8 (4S_) from MY 2017", page 84
- "2.8.20 Adapter for Assembling Flushing Circuits, e-tron (GE_) from MY 2019", page 85
- "2.8.21 Adapter for Assembling Flushing Circuits, e-tron GT (F8_) from MY 2022", page 87

2.8.1 Adapter for Assembling Flushing Circuits, A1 (8X_) from MY 2017

Refrigerant lines to A/C compressor adapter	Adapters for the connections to the reservoir or receiver/dryer	Miscellane- ous
Refrigerant Circuit, Cleaning: ◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- con- nected to the A/C Service Sta- tion and the Re- frigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 3 - VAS 6338/3- or Refrigerant Circuits Adapter Set 1 - Adapter 2 - VAS 6338/2- (depending on the version of the A/C com- pressor and its refrigerant line).	Receiver/dryer (different versions): Version 1 (the receiver/dryer is integrated on the condenser): the adapter is not needed, the desiccant bag is removed from the receiver/dryer on the condenser and opening is closed again for flushing. Version 2 (receiver/dryer attached to the condenser): the adapter is not needed, the receiver/dryer remains installed (it will be replaced after flushing)	◆ Expansion valve: Adapter - VAS 6338/34- or Adapter - VAS 6338/39- (see information below)

- The receiver/dryer may be attached to or integrated in the condenser, depending on the version of the condenser. A dryer cartridge is installed in the integrated receiver/dryer and can be replaced separately. An attached receiver/dryer must be replaced after the flushing. Refer to the ⇒ Electronic Parts Catalog (ETKA) and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit
- For vehicles with the model codes "8X1" and "8XA" an expansion valve is installed, which must be replaced with the Adapter - VAS 6338/34- . Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Expansion Valve, Removing and Installing.
- For vehicles with the model codes "8XF" and "8XK" and lex authorised by AUDI AG. AUDI AG does not guarantee or accept any liability pansion valve is installed, which must be replaced with thehe correctness of information in this document. Copyright by AUDI AG. Adapter - VAS 6338/39- . Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Expansion Valve, Removing and Installing
- 2.8.2 Adapter for Assembling Flushing Circuits, A1 (GB_) from MY 2019, A3 (8V_/ 85_) from MY 2017, A3 (8Y_) from MY 2021 ▶, TT (FV_) from MY



2017, Q2 (GA_) from MY 2017, Q3 (F3_) from MY 2019

Refrigerant lines to A/C compressor adapter	Adapters for the connections to the reservoir or receiver/dryer	Miscellane- ous
Refrigerant Circuit, Cleaning: ◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- con- nected to the A/C Service Sta- tion and the Re- frigerant Circuit Adapter Set - Adapter - VAS 6338/48-	Receiver/dryer (different versions): No adapter necessary, the receiver/dryer remains installed (or is integrated in the condenser). Remove the dryer cartridge before flushing out of the receiver/dryer on the condenser and reseal the opening refer to the notes).	◆ Expansion valve: Rinsing Adapter - VAS 6338/38A-
 ◆ High pressure side: Rinsing Adapter - VAS 6338/3A- 		

Condensers with an integrated receiver/dryer or dryer cartridge that cannot be replaced separately or is not available as a replacement part, the condenser must be replaced after flushing (with the dryer cartridge installed). Refer to
⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87;
Refrigerant Circuit (vehicle-specific repair manual) and the ⇒ Electronic Parts Catalog (ETKA) .



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Adapter for Assembling Flushing Cir-2.8.3 cuits, A3 e-tron (8V_/ 85_) from MY 2013 ►

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous
Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit	Receiver/dryer (different versions): No adapter necessary, the receiver/dryer remains installed (or is integrated in the condenser). Depending on the condenser version, remove the dryer cartridge from the receiver denser before flushing and then seal the opening again (see note).	◆ Expansion valve: Rinsing Adapter - VAS 6338/38A

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous	
		and High- Voltage Battery Heater Core Re- frigerant Shut-Off Valve High-Volt- age Bat- tery Heat- er Core Refriger- ant Shut- Off Valve - N542- after flushing. ◆ The re- strictor in the refrig- erant line to the high-volt- age bat- tery heat exchang- er is re- moved or the refrig- erant line is drilled open. Re- fer to ⇒ page 60 . Re- place af- ter flush- ing.	
Flush the A/C compressor: ◆ Low-pressure side: Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A-			
 ✦ High pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 40 - VAS 6338/40A- 		ermitted unless author	Copying for private or commercial purposes, in part or in whole, is n rised by AUDI AG. AUDI AG does not guarantee or accept any liabil prrectness of information in this document. Copyright by AUDI AG.

The version of the receiver/dryer on the Audi A3 will differ depending on the manufacturer of the condenser. The receiver/dryer is, for example, inside the condenser. The integrated receiver/dryer has a dryer cartridge that is no longer available as a replacement part. If there is a complaint



regarding a vehicle with this condenser, it may be necessary to replace the entire condenser after correcting the complaint. Refer to the ⇒ Electronic Parts Catalog (ETKA) and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).

- Condensers with an integrated receiver/dryer or dryer cartridge that cannot be replaced separately or is not available as a replacement part, the condenser must be replaced after flushing (with the dryer cartridge installed). Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual) and the ⇒ Electronic Parts Catalog (ETKA) .
- For this vehicle the refrigerant circuit is flushed by diving it into two sections. During the first flushing cycle, the Shut-off Valves - VAS 6338/42-, which is installed instead of the Heater and A/C Unit Refrigerant Shut-Off Valve Heater and A/C Unit Refrigerant Shut-Off Valve - N541-, is open. The Shut-off Valves - VAS 6338/42-, which is installed instead of the High-Voltage Battery Heater Core Refrigerant Shut-Off Valve High-Voltage Battery Heater Core Refrigerant Shut-Off Valve - N542-, is closed. The refrigerant circuit with the evaporator in the heater and A/C unit is flushed as a result. During the second flushing cycle, the Shut-off Valves - VAS 6338/42-, which is installed instead of the Heater and A/C Unit Refrigerant Shut-Off Valve Heater and A/C Unit Refrigerant Shut-Off Valve - N541-, is closed. The Shut-off Valves - VAS 6338/42-, which is installed instead of the High-Voltage Battery Heater Core Refrigerant Shut-Off Valve High-Voltage Battery Heater Core Refrigerant Shut-Off Valve -N542-, is open. The refrigerant circuit with the evaporator in the high-voltage battery heat exchanger is flushed as a result. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).
- The Heater and A/C Unit Refrigerant Shut-Off Valve N541and the High-Voltage Battery Heater Core Refrigerant Shut-Off Valve - N542- must be replaced after flushing.

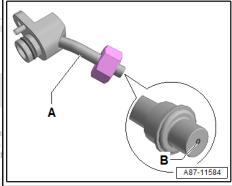
Prepare the old restrictor for flushing:

- The illustration shows a refrigerant line -A- with a permanently installed restrictor -B- (without screen)
- Drill out the refrigerant line -A- for flushing the refrigerant circuit, using a suitable 5.0 mm drill or remove an inserted restrictor.
- Clean the refrigerant line -A- before installation into the flushing circuit.

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The diameter of the illustrated restrictor hole -B- is approximately 0.7 mm. Depending on the version of the refrigerant line, this constriction is either permanently installed in the refrigerant line or is only inserted. A screen to separate floating deposits may be installed on the inserted version, which can block the restrictor hole.

The refrigerant line or an inserted restrictor must be replaced after flushing. Refer to ⇒ Electronic Parts Catalog (ETKA).





2.8.4 Adapter for Assembling Flushing Circuits, A3 TFSI e (8Y_) MY 2021 ▶, Q3 TFSI e (F3_) MY 2021 ►

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous	
Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter 12 - VAS 6338/12- con- nected to the A/C Service Sta- tion and the Re- frigerant Circuit Adapter Set - Adapter - VAS 6338/48- High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/Dryer: No adapter is necessary, the receiver/dryer is pyrigh integrated into the constant denser UDI AG. AUDI AG does the correctness of information in this does the condenser version, remove the dryer cartridge from the receiver/dryer on the condenser before flushing and then seal the opening again (see note).		whole, is not pt any liability AUDI AG.

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous	
Clean the A/C compressor: ◆ Low-pressure side: Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A-			
Set 1 - Adapteritte	t by copyright. Copying for private or com d unless authorised by AUDI AG, AUDI AG espect to the correctness of information in	G does not guarantee	or accept any liability

- For this vehicle the refrigerant circuit is flushed by diving it into two sections. During the first flushing cycle, the Shut-off Valves - VAS 6338/42- , which is installed instead of the Heater and A/C Unit Refrigerant Shut-Off Valve Heater and A/C Unit Refrigerant Shut-Off Valve - N541-, is open. The Shut-off Valves - VAS 6338/42-, which is installed instead of the High-Voltage Battery Heater Core Refrigerant Shut-Off Valve High-Voltage Battery Heater Core Refrigerant Shut-Off Valve - N542-, is closed. The refrigerant circuit with the evaporator in the heater and A/C unit is flushed as a result. During the second flushing cycle, the Shut-off Valves - VAS 6338/42-, which is installed instead of the Heater and A/C Unit Refrigerant Shut-Off Valve Heater and A/C Unit Refrigerant Shut-Off Valve - N541-, is closed. The Shut-off Valves - VAS 6338/42-, which is installed instead of the High-Voltage Battery Heater Core Refrigerant Shut-Off Valve High-Voltage Battery Heater Core Refrigerant Shut-Off Valve -N542-, is open. The refrigerant circuit with the evaporator in the high-voltage battery heat exchanger is flushed as a result. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual).
- The Heater and A/C Unit Refrigerant Shut-Off Valve N541and the High-Voltage Battery Heater Core Refrigerant Shut-Off Valve - N542- must be replaced after flushing.

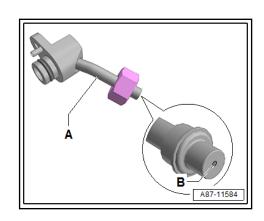
Prepare the old restrictor for flushing:

- The illustration shows a refrigerant line -A- with a permanently installed restrictor -B- (without screen)
- Drill out the refrigerant line -A- for flushing the refrigerant circuit, using a suitable 5.0 mm drill or remove an inserted restrictor.
- Clean the refrigerant line -A- before installation into the flushing circuit

Tip

The diameter of the illustrated restrictor hole -B- is approximately 0.7 mm. Depending on the version of the refrigerant line, this constriction is either permanently installed in the refrigerant line or is only inserted. A screen to separate floating deposits may be installed on the inserted version, which can block the restrictor hole.

The refrigerant line or an inserted restrictor must be replaced after flushing. Refer to ⇒ Electronic Parts Catalog (ETKA)



2.8.5 Adapter for Assembling Flushing Circuits, A4 (8K_) from MY 2017

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous	
◆ Low pressure of side: Refrigerant Circuits Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/Dryetie or commercial auth No adapter needed, does the the receiver/dryer resident mains installed Depending on the condenser version, remove the dryer cartridge from the receiver/dryer on the condenser before flushing and then seal the opening again (see note).	ot gu sion e or acce	pt any liability AUDI AG.

- If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to > Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA) .
- 2.8.6 Adapter for Assembling Flushing Circuits, A5 Coupe and Sportback (8T) from MY 2017, Q5 (8R_ / 83_) from

MY 2017, A5 Cabriolet (8F_) from MY

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous
◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/Dryer: No adapter needed, the receiver/dryer remains installed Depending on the condenser version, remove the dryer cartridge from the receiver/dryer on the condenser before flushing and then seal the opening again (see note).	◆ Expansion valve: Rinsing Refrigerant Circuits Adapter - VAS 6338/36A-

If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).

2.8.7 Adapter for Assembling Flushing Circuits, A5 (F5_) from MY 2016, Q5 (FY_) from MY 2017, A4 (8W_) from MY 2017

Required ada for the conne to A/C compr	ctions	Adapters necessary for the connections to the reservoir or receiver/dryer	Mi ou	scellane- is	
◆ Low press side: Refr Circuits A Set 1 - Ad 12 - VAS 6338/12- nected to A/C Serviction and the frigerant C Adapter S Adapter - 6338/48-	igerant dapter lapter con- the ce Sta- ne Re- Circuit set -	 No adapter required, the desiccant bag/dry- er cartridge is removed from the receiver/dryer on condenser and the opening is sealed. 		Expansion valve: Rinsing Refrigerant Circuits Adapter - VAS 6338/44-	
n ameno itt	ed unlaca au	ght. Copying for private or commercial pur thorised by AUDI AG. AUDI AG does not te correctness of information in this docum	~	rantaa ar aaaant	unu liabilitu

If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87;



Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA) .

2.8.8 Adapter for Assembling Flushing Circuits, A6 (4G_/4X_) from MY 2017, A7 (4G_ oder 4X_) from MY 2017

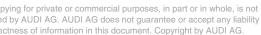
Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellane- ous
◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/dryer (different versions) No adapter needed, the receiver/dryer remains installed Depending on the condenser version, remove the dryer cartridge from the receiver/dryer on the condenser before flushing and then seal the opening again (see note).	◆ Expansion valve: Refrigerant Circuits Adapter Set 1 - Adapter 18 - VAS 6338/18-

If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to \Rightarrow Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).

2.8.9 Adapter for Assembling Flushing Circuits, A6 (4A_) from MY 2019, A7 (4K_) from MY 2018

Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellane- ous
◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	No adapter required, per the desiccant bag/dry-wer cartridge is removed from the receiver/dryer on condenser and the opening is sealed.	hed Expan ^a hor ith resion the covalve: Rinsing Refriger- ant Cir- cuits Adapter - VAS 6338/44-

If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the in-





stalled dryer cartridge) must be replaced after flushing. Refer to \Rightarrow Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the \Rightarrow Electronic Parts Catalog (ETKA).

2.8.10 Adapter for Assembling Flushing Circuits, A6 TFSI e (4K_) MY 2019 ▶, A7 TFSI e (4K_) MY 2019 ►

Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellaneous	
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Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellaneous	
Clean the A/C compressor: ◆ Low-pressure side: Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A-			31
 ◆ High pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 40 - VAS 6338/40A- 	permitted unless author	ised by AUDI AG. AUDI	nmercial purposes, in part or in whole, is no G does not guarantee or accept any liabilit n this document. Copyright by AUDI AG.

- For cleaning the refrigerant circuit, it will be separated in several segments and flushed one after the other. The design of the different flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- Replace the refrigerant receiver at the heater core for heat pump operation after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- ♦ Replace the Refrigerant Shut-Off Valve V424- after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).

Αυδι

Adapter for Assembling Flushing Cir-2.8.11 cuits, A8 (4H_) from MY 2010

		Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiv- er/dryer	Miscella- neous
•	Vehicle with one evaporator	side: Refrig- erant Circuits Adapter Set	Receiver/Dryer No adapter required, the desiccant bag/dryer cartridge is removed from the receiver/dryer on condenser and the opening is sealed.	◆ Expansion valve: Refrigerant Circuits Adapter Set 1 - Adapter 18 - VAS 6338/18-



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		Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscella- neous
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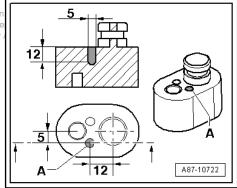
Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscella- neous	
ers for the con- nections to A/C	for the connections to the reservoir or receiv-		
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Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiv- er/dryer	Miscella- neous
		6338/4- for con- necting the A/C service station to the "high- pres- sure side" con- nection (for the second evapo- rator).

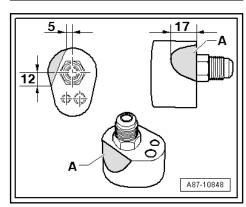
Drill an additional hole in the Refrigerant Circuits Adapter Set 1 - Adapter 5 - VAS 6338/5- and Refrigerant Circuits Adapter Set 1 - Adapter 11 Refrigerant Circuits Adapter Set 1 - Adapter 11 -VAS 6338/11-.

Drill a hole -A- in addition to the already existing hole (the dimensions in the illustration are given in many mercial purposes, in part or in permitted unless authorised by AUDI AG. AUDI AG does not guarantee or according to the control of the con

Rework the Refrigerant Circuits Adapter Set The Adapter 3 ent. Copyright by VAS 6338/3- .



By grinding or filing down material in section -A-, rework the Refrigerant Circuits Adapter Set 1 - Adapter 3 - VAS 6338/3so that it can be connected without bending the refrigerant line (the dimensions in the illustration are in mm).





Adapter for Assembling Flushing Cir-2.8.12 cuits, A8 (4N_) from MY 2018

		er ne	equired adapt- s for the con- ections to A/C empressor	co er	equired adapters for nnections to receiv- /dryer / to second aporator	1	scella- eous
•	Vehi- cle with one evap- ora- tor	•	Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12-connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-	_	No adapter required, the desiccant bag/dryer cartridge is removed from the receiver/dryer on condenser and the opening is sealed.	•	Expansion valve: Rinsing Refrigerant Circuits Adapter - VAS 6338/44
		•	High pressure side: Rinsing Adapter - VAS 6338/3A-			X	



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		Required adapters for the connections to A/C compressor	Required adapters for connections to receiver/dryer / to second evaporator	Miscella- neous
ti n fc v c w tv	ddi- o- ally or ehi- les <i>i</i> ith vvap- ra- ors		To flush the circuit with the evaporator in the front heater and A/C unit ◆ Refrigerant Circuits Adapter Set 1 - Adapter 44 - VAS 6338/44- and Refrigerant Circuits Adapter Set 1 - Adapter 43 - VAS 6338/43- (to seal the refrigerant circuit to the second evaporator)	The expansion valve is removed from the evaporator in the front of the heater and A/C unit and Refrigerant Circuits Adapter Set 1 - Adapter 44 - VAS 6338/44 is installed. Expansion valve is removed from the refrigerant lines to the evaporator in the rear A/C unit and Refrigerant Circuits Adapter Set 1 - Adapter 43 - VAS 6338/43 is installed.



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Required adapters for the connections to A/C compressor	Required adapters for connections to receiv- er/dryer / to second evaporator	Miscella- neous
normitted ur	To flush the second evaporator and corresponding lines ◆ Refrigerant Circuits Adapter Set 1 - Adapter 44 - VAS 6338/44- and Refrigerant Circuits Adapter Set 1 - Adapter 43 - VAS 6338/43- (to seal the refrigerant circuit to the evaporator in the front of the heater and A/C unit) copyright. Copying for private or colless authorised by AUDI AG. AUDI act to the correctness of information	parision

On vehicles with two evaporators, the refrigerant circuit with the evaporator in the front of the heater and A/C unit is flushed first. The refrigerant circuit to the second evaporator (in the rear A/C unit) must be blocked off so that the refrigerant flows in the specified direction during the flushing procedure. This is done by removing the expansion valve in the refrigerant lines to the second evaporator and installing the Flushing Adapter - VAS 6338/43- (closed adapter). After the refrigerant circuit with the evaporator is flushed, switch both adapters Refrigerant Circuits Adapter Set 1 - Adapter 43 Flushing Adapter - VAS 6338/43- and Refrigerant Circuits Adapter Set 1 - Adapter 44 Expansion Valve - VAS 6338/44and flush the refrigerant circuit with the evaporator in the rear of the heater and A/C unit.



Adapter for Assembling Flushing Cir-2.8.13 cuits, A8 (4N_) TFSI e from MY 2019

Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellaneous	
Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- con- nected to the A/C Service Station and the Refriger- ant Circuit Adapter Set - Adapter VAS 6338/48- High pressure side: Rinsing Adapter - VAS 6338/3A-	No adapter required, the desiccant bag/dryer cartridge is removed from the receiver/dryer on condenser and the opening is sealed.	◆ Expansion valve: Rinsing Refrigerant Circuits Adapter - VAS 6338/47-1 (quantity 2) and Refrigerant Circuit Adapter Set - Adapter - VAS 6338/47-1 (quantity 2) and Refrigerant Circuit Adapter Set - Adapter - VAS 6338/47-2 (quantity 2) from the Refrigerant Circuit Adapter Set - VAS 6338/47- ◆ Refrigerant Circuit Adapter Set - VAS 6338/47- ◆ Refrigerant Shut-Off Valve - V424- replaced by Set - Shut-Off Valve - V424- replaced by Set - Shut-Off Valve - VAS 6338/42-	
Clean the A/C compressor: ◆ Low-pressure side: Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A-			or private or commercial purposes, in part or in whole, is not UDI AG. AUDI AG does not guarantee or accept any liability
 ◆ High pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 40 - VAS 6338/40A- 			of information in this document. Copyright by AUDI AG.

For cleaning the refrigerant circuit, it will be separated in several segments and flushed one after the other. The de-

sign of the different flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).

- Replace the refrigerant receiver at the heater core for heat pump operation after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Replace the Refrigerant Shut-Off Valve V424- after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).

2.8.14 Adapter for Assembling Flushing Circuits, Q3 (8U_ / 84_) MY 2017 ▶

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous
◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/Dryer - No adapter required, the desiccant bag/dryer cartridge is removed from the receiver/dryer on condenser and the opening is sealed.	◆ Expansion valve: Refrigerant Circuits Adapter Set 1 - Adapter 18 - VAS 6338/18-

If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and private or commercial purposes, in part or in whole, is not

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Adapter for Assembling Flushing Cir-2.8.15 cuits, Q4 e-tron (F4_) MY 2022 ▶

Required adapters for the connections to A/C compressor	Adapters necessary for the connections to the reservoir or receiver/dryer	Miscellane- ous
◆ Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- ◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	No adapter required, the desiccant bag/dry-er cartridge is removed from the receiver/dryer on condenser and the opening is sealed.	◆ Expansion valve: Rinsing Adapter - VAS 6338/38A- ◆ Heater and A/C Unit Refrigerant Shut-Off Valve - N541-: Shut-off Valves - VAS 6338/42-

If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).



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Adapter for Assembling Flushing Cir-2.8.16 cuits, Q5 TFSI e (FY_) MY 2019 ▶

Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellaneous	
Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12- con- nected to the A/C Service Station and the Refriger- ant Circuit Adapter er Set - Adapter VAS 6338/48- High pressure side: Rinsing Adapter - VAS 6338/3A-		◆ Expansion valve: Rinsing Refrigerant Circuits Adapter - VAS 6338/44- ◆ Check valves replaced by Refrigerant Circuit Adapter Set - Adapter - VAS 6338/47-1- (Quantity: 2) and Refrigerant Circuit Adapter Set - Adapter - VAS 6338/47-2- (Quantity: 2) from the Refrigerant Circuit Adapter Set - VAS 6338/47- ◆ Refrigerant Circuit Adapter Set - VAS 6338/47- ◆ Refrigerant Circuit Adapter Set - VAS 6338/47- ◆ Refrigerant Shut-Off Valve - V424- replaced by Set - Shut-Off Valve - VAS 6338/42-	
Clean the A/C compressor: ◆ Low-pressure side: Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A- ◆ High pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 40 - VAS 6338/40A-		permitted unless authoris	ppying for private or commercial purposes, in part or in whole, is not ed by AUDI AG. AUDI AG does not guarantee or accept any liability rectness of information in this document. Copyright by AUDI AG.



- For cleaning the refrigerant circuit, it will be separated in several segments and flushed one after the other. The design of the different flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- Replace the refrigerant receiver at the heater core for heat pump operation after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Replace the Refrigerant Shut-Off Valve V424- after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- ◆ If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).

Adapter for Assembling Flushing Cir-2.8.17 cuits, Q7 (4M_) from MY 2016, Q8 (4M) from MY 2018

	Required adapters for the connections to A/C compressor	Required adapters for connections to receiver/dryer / to second evaporator	Miscella- neous	
♦ Vehicle with one evaporator	side: Refrig- erant Circuits Adapter Set	quired, the desic- cant bag/dryer car- tridge is removed from the receiv- er/dryer on con- denser and the opening is sealed.	◆ Expansion valve: Rinsing Refriger ant Circuits Adapter - VAS 6338/44	

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	Required adapters for the connections to A/C compressor	Required adapters for connections to receiver/dryer / to second evaporator	Miscella- neous	
Additionally for vehicles with two evaporators		To flush the circuit with the evaporator in the front heater and A/C unit ◆ Refrigerant Circuits Adapter Set 1 - Adapter 44 - VAS 6338/44- and Refrigerant Circuits Adapter Set 1 - Adapter 43 - VAS 6338/43- (to seal the refrigerant circuit to the second evaporator)	The expansion valve is removed from the evaporator in the front of the heater and A/C unit and Refrigerant Circuits Adapter Set 1 - Adapter 44 - VAS 6338/44 is installed. Expansion valve is removed from the refrigerant lines to the evaporator in the rear A/C unit and Refrigerant Circuits Adapter Set 1 - Adapter 43 - VAS 6338/43 is installed.	

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On vehicles with two evaporators, the refrigerant circuit with the evaporator in the front of the heater and A/C unit is flushed first. The refrigerant circuit to the second evaporator (in the rear A/C unit) must be blocked off so that the refrigerant flows in the specified direction during the flushing procedure. This is done by removing the expansion valve in the refrigerant lines to the second evaporator and installingercial purposes, in part or in whole, is not the Flushing Adapter - VAS 6338/43 (Closed adapter). After less not guarantee or accept any liability the refrigerant circuit with the evaporator is flushed, switch both adapters Refrigerant Circuits Adapter Set 1 - Adapter 43 Flushing Adapter - VAS 6338/43- and Refrigerant Circuits Adapter Set 1 - Adapter 44 Expansion Valve - VAS 6338/44and flush the refrigerant circuit with the evaporator in the rear of the heater and A/C unit.



Adapter for Assembling Flushing Cir-2.8.18 cuits, Q7 (4M_) e-tron from MY 2017, Q7 TFSI è (4M_), Q8 TFSI e (4M_)

Vehicle	Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellane- ous
	Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 12 - VAS 6338/12-connected to the A/C Service Station and the Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48- High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/Dryer - No adapter required, dryer is removed from receiver/dryer on condenser and the opening is sealed.	◆ Expansion valve: Refrigerent Circles ant Circles ant Circles cuit Adapter Set - Adapter 44 - VAS 6338/44- ◆ Refrigerant Shut- Off Valve - V424 replaced by Set - Shut-Off Valve - VAS 6338/42-
Additionally for vehicle heat pump function			◆ Check valves replaced by Refrigerant Circuit Adapter Set - Adapter Circuit Adapter Set - VAS 6338/47-2- (quantity 2) from the Refrigerant Circuit Adapter Set - VAS 6338/47-

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Vehicle	Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellane- ous	
	41 - VAS 6338/41A- ◆ High pres- sure side: Refrigerant Circuits Adapter Set 1 - Adapter	by copyright. Copying for prival unless authorised by AUDI AC espect to the correctness of info	AUDI AG does not o	uarantee or accept any liabil
	Adapter Set			

- Depending on vehicle equipment, on these vehicles, the refrigerant circuit is flushed in two or four steps (flushing cycles). Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (A/C System Refrigerant Circuit, Cleaning).
- ♦ For cleaning the refrigerant circuit, it will be separated in several segments and flushed one after the other. The design of the different flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- Replace the refrigerant receiver at the heater core for heat pump operation after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Replace the Refrigerant Shut-Off Valve V424- after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA) .

2.8.19 Adapter for Assembling Flushing Circuits, R8 (4S_) from MY 2017

Required adapters for the connections to A/C compressor	Required adapters for the connections to the receiver/dryer (with dryer)	Miscellane- ous	
I frigerant:€ircuit au	Receiver/Dryer Refrigerant Circuits Adapter Set 1 - Adapter 45 - VAS 6338/45- (Quantity: 2) Refrigerant Circuits Adapter Set 1 - Adapter Set 1 - Adapter Set 2 - VAS 6338/45- (Quantity: 2)	guara 36 e er ∀Æ St an	y liabil
◆ High pressure side: Rinsing Adapter - VAS 6338/3A-	erVăi	dryer is removed and both refriger- ant line connectors are connected with two adapters Refriger- ant Circuit Adapter Set - Adapter 45 - VAS 6338/45- and a commercially available filler hose (short version with 5/8" threads on both sides)	

- ◆ Depending on the engine, the A/C compressor can only be removed when the engine is removed on the Audi R8. To flush the refrigerant circuit, the refrigerant lines can be removed when the A/C compressor is installed. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (vehicle-specific repair manual). With the A/C compressor installed the refrigerant oil quantity in the A/C compressor cannot be determined, for this reason flushing the refrigerant circuit with the A/C compressor installed would not be productive.
- Both installed condensers are flushed in opposite direction of the refrigerant flow direction.
- ♦ A short version of the filler hose is also included in the Refrigerant Circuits Adapter Set 1 VAS 6338/1-.
- The receiver/dryer could potentially be flushed but it will take too much refrigerant because of its large internal volume; the



receiver/dryer would ice-up too much when extracting the refrigerant, the refrigerant would evaporate too slowly and extraction would be prolonged too much.

Adapter for Assembling Flushing Cir-2.8.20 cuits, e-tron (GE_) from MY 2019

Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellaneous	
Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 79 - VAS 6338/79- con- nected to the A/C Service Station and the Refriger- ant Circuit Adapt- er Set - Adapter VAS 6338/48- High pressure side: Rinsing Adapter - VAS 6338/3A-	Receiver/Dryer No adapter required, dryer is removed from receiver/dryer on condenser and the opening is sealed.	ermitted Adapter forise	ying for private or commercial purposes, in part or in whole, is not d by AUDI AG. AUDI AG does not guarantee or accept any liability theses of information in this document. Copyright by AUDI AG.

Required adapters for the connections to A/C compressor	Required adapters for the connections to receiver/dryer	Miscellaneous
Clean the A/C compressor: ◆ Low-pressure side: Refrigerant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A-		
♦ High pressure side: Refrigerant Circuits Adapter Set 1 Adapter 40, 10 Adapter	pying for private or commercial purpos d by AUDI AG. AUDI AG does not gua ctness of information in this document	es, in part or in whole, is he rantee or accept any liablit Copyright by AUDI AG.

- For cleaning the refrigerant circuit, it will be separated in several segments and flushed one after the other. The design of the different flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- Replace the refrigerant receiver at the heater core for heat pump operation after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- Replace the Refrigerant Shut-Off Valve V424- after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.
- If the receiver/dryer or dryer cartridge is integrated in the condenser, and it cannot be replaced separately or is not available as a single part, then the condenser (with the installed dryer cartridge) must be replaced after flushing. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Ğr. 87; Refrigerant Circuit, Condenser, Removing and Installing and the ⇒ Electronic Parts Catalog (ETKA).



Adapter for Assembling Flushing Cir-2.8.21 cuits, e-tron GT (F8_) from MY 2022

Vehicle	Required adapters for the connections to A/C compressor	Necessary adapter for the connections to the dryer / for the check valves and shut-off valves	Miscellane- ous	
	Refrigerant Circuit, Cleaning: Low pressure side: Refrigerant Circuits Adapter Set 1 - Adapter 79 - VAS 6338/79- High pressure side: Rinsing Adapter - VAS 6338/3A- Hose - VAS 6338/31- to connect the Refrigerant Circuits Adapter Set 1 - Adapter 3 - VAS 6338/3- and the Refrigerant Circuit Adapter - VAS 6338/79	Dryer - Dryer removed and replaced by Refrigerant Circuit Adapter - VAS 6338/76 Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Dryer, Removing and Installing .	 If necessary, connect the additional Quick-Release Coupling, Low Pressure to the filler hose of the Flushing Device using a fitting Adapter. Order the additional Quick-Release Coupling, Low Pressure and the corresponding Adapter via the respective manufacturer of the A/C Service Station. 	
Vehi- cles with heat pump		Protected by copyright. permitted unless autho with respect to the c	◆ Check valve: Refrigerant Circuit Adapter Set - Adapter - CopylyASprivate or rised 16338/47-11 From the Refrigerant Circuit Adapter Set - VAS 6338/47-	commercial purposes, in part or in whole, is not JDI AG does not guarantee or accept any liability ion in this document. Copyright by AUDI AG.

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Vehicle	Required adapters for the connections to A/C compressor	Necessary adapter for the connections to the dryer / for the check valves and shut-off valves	Miscellane- ous	
Vehi- cles without heat pump			◆ Install the Adapter - VAS 6338/47-1 from the Refriger-ant Circuit Adapter Set - VAS 6338/47-into the refrigerant line dryer/condenser.	
	Clean the A/C compressor: ◆ Low-pressure side: Refriger- ant Circuit Adapter Set - Adapter - VAS 6338/48-, Refrigerant Circuits Adapter Set 1 - Adapter 41 - VAS 6338/41A- ◆ High pressure side: Refriger- ant Circuits Adapter Set 1 - Adapter 40 - VAS 6338/40A-			

- On this vehicle, the refrigerant circuit is flushed in three or purposes, in part or in whole, is not four steps (flushing cycles) depending on the Vehicle equipt guarantee or accept any liability ment. Refer to \Rightarrow Heating, Ventilation and Air Conditioning, Rep. Gr. 87; Refrigerant Circuit (A/C System Refrigerant Circuit, Cleaning).
- The design of the different flushing circuits is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (Cleaning the A/C system refrigerant circuit).
- After flushing the dryer must be replaced. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit; Dryer, Removing and Installing.
- Depending on the cause for the flushing procedure, further components must be replaced after flushing. This is described in the vehicle-specific repair manual. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit (clean the refrigerant circuit of the A/C system).

3 Working with A/C Service Station

- ⇒ "3.1 A/C Service Station on Refrigerant Circuit, Connecting", page 89
- ⇒ "3.2 Refrigerant Gas Analysis, Performing", page 90
- ⇒ "3.3 Refrigerant Circuit, Discharging", page 90
- ⇒ "3.4 Refrigerant Circuit, Evacuating", page 92
- ⇒ "3.5 Refrigerant Circuit, Charging", page 94
- ⇒ "3.6 A/C System, Operating after Charging", page 95
- ⇒ "3.7 A/C Service Station, Switching off and Disconnecting from Refrigerant Circuit", page 95
- ⇒ "3.8 Refrigerant, Filling in Reservoir", page 96
- ⇒ "3.9 A/C Service Station, Discharging", page 96
- "3.10 Electrically-Driven A/C Compressor, Cleaning", page
- ⇒ "3.11 Refrigerant Circuit, Cleaning", page 97
- ⇒ "3.12 Contaminated Refrigerant, Filling in Recycling Cylinder for Analysis, Processing, or Disposal", page 99

A/C Service Station on Refrigerant Cir-3.1 cuit, Connecting

Procedure

Depending on the A/C Service Station used, changes to the work procedure may be needed. Therefor pay attention to the Owner's Manual. Refer to ⇒ Owner's Manual.

Vehicles with High-Voltage System

Deactivate the "parking air conditioner". Refer to ⇒ Owner's Manual.

Continuation for all vehicles

- Switch off the ignition.
- Start the A/C Service Station according to the corresponding operating instructions. Refer to ⇒ Owner's Manual .
- Remove the caps from the service connections. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .
- Check the refrigerant circuit service connections for debris and corrosion and if necessary clean.

TIP

- Dirt or a rough surface on the service connections due to corrosion can cause seal damage, which can then cause premature failure of the quick-release couplings.
- Connect the quick-release couplings to the service connections (low pressure and high pressure). Do not screw in the hand wheels of the quick-release couplings.
- Perform the specified procedures using the A/C service station. Refer to Refer to ⇒p"3. Working with A/C Service Star nercial purposes, in part or in whole, is not <u>tion", page 89</u> . permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3.2 Refrigerant Gas Analysis, Performing

- The gas analysis is used to meet the specified purity of the refrigerant, to detect contaminated refrigerants and to protect the A/C Service Station .
- Without a gas analysis no refrigerant should be removed from the A/C Service Station .
- Use of the wrong refrigerant will void the type approval for the vehicle.
- Connect the Gas Analyzer or A/C Service Station to the refrigerant circuit according to the owner's manual and start up. Refer to ⇒ Owner's Manual .
- Perform the gas analysis according to the owner's manual. Refer to > Owner's Manual right. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

TIP

- A minimum refrigerant circuit pressure is necessary (for example 2.5 bar (36.26 psi) at an ambient temperature of 20 °C (68 °F)) for performing the gas analysis.
- If no sufficient pressure can be built up due to very little refrigerant left in the circuit, then it might not be possible anymore to perform a gas analysis, depending on the version of the A/C Service Station or the Gas Analyzer. Refer to ⇒ Owner's Manual.

The following values apply for a gas analysis of clean refrigerant R1234vf:

- The extracted refrigerant gas is made up of a minimum of 95 % refrigerant R1234yf.
- The portion of foreign gases (oxygen, nitrogen, steam, and other refrigerants) is less than 5 %.

Refrigerant does match the specifications.

Perform the necessary procedures using the A/C Service Station . Refer to ⇒ "3 Working with A/C Service Station", <u>page 89</u>

Refrigerant does not match the specifications:

Return the contaminated refrigerant to, for example, the gas supplier for analysis, processing or disposal. Refer to Refer to ⇒ "3.12 Contaminated Refrigerant, Filling in Recycling Cylinder for Analysis, Processing, or Disposal", page 99.

If the gas analysis determines contaminated refrigerant or refrigerant of unknown composition, then the client must be made aware of this situation before continuing the procedures.

If the wrong refrigerant has been used in the refrigerant circuit, then a special evaluation must be performed and appropriate measures must be taken.

3.3 Refrigerant Circuit, Discharging

Special tools and workshop equipment required

- A/C Service Station
- Depending on the A/C Service Station used, changes to the work procedure may be needed. Refer to ⇒ Owner's Manual.



Procedure

Vehicles with High-Voltage System

Deactivate the "parking air conditioner". Refer to ⇒ Owner's Manual.

Vehicles with high-voltage system, for which electric activated valves in the refrigerant circuit are not open when de-energized.

Open the electric activated valves for the refrigerant circuit for extracting, evacuating and filling. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit and the ⇒ Vehicle diagnostic tester.

For vehicles with a high-voltage system and secondary functions of the A/C system, valves may be installed in the refrigerant circuit. To guarantee correct draining, evacuating and filling of the refrigerant circuit, no segments are allowed to be closed off. That is why the valves need to be opened before respective work procedures. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Continuation for all vehicles

- Switch off the ignition.
- Connect the A/C Service Station to the refrigerant circuit. Refer to Refer to ⇒ "3.1 A/C Service Station on Refrigerant Circuit, Connecting", page 89
- Perform a gas analysis. Refer to <u>⇒ "3.2 Refrigerant Gas</u> <u> Analysis, Performing", page 90</u> .
- To empty the refrigerant circuit, select the high and low pressure connections at the A/C Service Station
- Discharge the refrigerant circuit using the A/C Service Station .
- Depending on the version of the A/C Service Station, it can generate a vacuum in the refrigerant circuit when extracting the refrigerant (residual pressure less than approximately 300 mbar (4.35 psi)).



Risk of damaging the A/C compressor by the refrigerant circuit vacuum.

- Never start the engine with vacuum in the refrigerant circuit.
- Document the capacity of refrigerant oil which was also removed when evacuating the refrigerant. Refer to Refer to ≥ "3.5 Refrigerant Circuit, Charging", page 94.

Tip

Depending on the A/C Service Station , the automatic mode (program to evacuate and immediate filling of refrigerant) will automatically add the capacity of removed refrigerant oil when filling. Refer to ⇒ Owner's Manual .

Should work be performed on the vehicle after discharging which does not require using the A/C Service Station:

Protected Disconnect the A/C Service Station from the refrigerant circuit and turn it off! Refer to Refer to 3.7 A/C Service Station, Switching off and Disconnecting from Refrigerant Circuit", page 95



Perform procedures at the refrigerant circuit. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Should the refrigerant circuit be evacuated and recharged after the discharging:

- Evacuate the refrigerant circuit. Refer to ⇒ "3.4 Refrigerant Circuit, Evacuating", page 92
- For vehicles with a mechanically driven A/C compressor and an empty refrigerant circuit, the engine can only be started if the refrigerant circuit is completely assembled. High speeds must be avoided.
- On vehicles with a compressor with A/C Compressor Regulator Valve - N280- the engine should not be run for longer than absolutely necessary with the refrigerant circuit empty (A/C compressor always in operation as well).

3.4 Refrigerant Circuit, Evacuating

Special tools and workshop equipment required

- A/C Service Station
- Depending on the A/C Service Station used, changes to the work procedure may be needed. Refer to ⇒ Owner's Manual.
- The refrigerant circuit is evacuated via the high and low. Copying for private or commercial purposes, in part or in whole, is not pressure connections.

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- The refrigerant circuit is completely assembled.



Risk of damaging the A/C compressor by the refrigerant circuit vacuum.

Never start the engine with vacuum in the refrigerant circuit.

Procedure

Vehicles with High-Voltage System

Deactivate the "parking air conditioner". Refer to ⇒ Owner's Manual.

Vehicles with high-voltage system, for which electric activated valves in the refrigerant circuit are not open when de-energized.

Open the electric activated valves for the refrigerant circuit for extracting, evacuating and filling. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit and the ⇒ Vehicle diagnostic tester.

Tip

For vehicles with a high-voltage system and secondary functions of the A/C system, valves may be installed in the refrigerant circuit. To guarantee correct draining, evacuating and filling of the refrigerant circuit, no segments are allowed to be closed off. That is why the valves need to be opened before respective work procedures. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Continuation for all vehicles

Switch off the ignition.



- Start the A/C Service Station according to its operating instructions. Refer to the ⇒ A/C Service Station Operating Instructions .
- Connect the A/C Service Station to the refrigerant circuit. Refer to Refer to ⇒ "3.1 A/C Service Station on Refrigerant Circuit, Connecting", page 89
- Evacuate the refrigerant circuit and perform a vacuum test. Monitor the following reference values at the A/C Service Station .

The refrigerant circuit was not opened and there are no signs of leaks.

- Vacuum time: 10 minutes
- Vacuum/pressure increase test: 5 minutes

Tip

Depending on the A/C Service Station it may be the case that the time references must not fall short of a specified duration.

The refrigerant circuit was open

- Vacuum time: minimum 30 minutes
- Vacuum/pressure increase test: 5 minutes

Continuation for all vehicles

- At the end of the evacuation procedure the pressure must be below 5 mbar (0.07 psi) absolute pressure.
- At the end of the vacuum/pressure increase test, the refrigerant circuit pressure must not be higher than 20 mbar (0.29 psi) absolute pressure.

Possible causes of malfunction for not reaching the vacuum during the evacuation process:

- Time for the evacuation process was set too short
- Leak in the refrigerant circuit. Refer to ⇒ "2.3 Leaks, Find-<u>ing", page 28</u> .
- Leaks in between the vehicle and the A/C Service Station .
- The vacuum pump of the A/C Service Station does not create the required vacuum
- The vacuum sensor of the A/C Service Station is not calibrated correctly. Refer to ⇒ Owner's Manual A/C Service Station

Possible causes of malfunction for not reaching the vacuum during the vacuum/pressure increase test:

- Leak in the refrigerant circuit. Refer to ⇒ "2.3 Leaks, Find-<u>ing", page 28</u> .
- Time for the evacuation process too short and the time for the vacuum/pressure increase test is set too long
- Leaks in between the vehicle and the A/C Service Station.
- Leaks within the A/C Service Station

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Tip

Even if the refrigerant circuit is sealed, evaporating refrigerant from the refrigerant oil or humidity as well as other factors (for example the amount of refrigerant oil in the refrigerant circuit, age and mileage of the vehicle, design of the refrigerant circuit) can lead to the specified absolute pressure rising above 20 mbar (0.29 psi) during the vacuum





test. If this is the case, repeat the procedure again if necessary and/or adjust the pre-set times accordingly.

If the vacuum reading does not change (and the pressure remains smaller than 20 mbar (0.29 psi)) the system does not have leaks and can be filled.

3.5 Refrigerant Circuit, Charging

Special tools and workshop equipment required

- A/C Service Station
- Depending on the A/C Service Station used, changes to the work procedure may be needed. Refer to ⇒ Owner's Manual.
- Filling the refrigerant circuit must be done via the high pressure connection, the low pressure connection can normally stay connected. Refer to > Owner's Manual
- Make sure the A/C Service Station is on the same level as the vehicle whose refrigerant circuit is to be charged (maximum difference 50 cm) when charging the refrigerant circuit. If a difference in height is too large, a difference between the amount of refrigerant displayed on the service station and the actual amount filled in the circuit may result (depending on the version of the A/C Service Station, the precision of for private or commercial purposes, in part or in whole, is not

the A/C Service Station may be impaired by that a sauthorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Procedure

- Check if the new refrigerant oil in the reservoir is the correct oil type and change the oil in the reservoir if necessary.
- Adjust the settings of the A/C Service Station that the refrigerant is filled through the high-pressure side. Refer to ⇒ Owner's Manual .

NOTICE

Risk of damage to the A/C compressor when starting it, due to liquid accumulation on the low-pressure side.

Fill refrigerant, refrigerant oil and UV additive via the high pressure connection.

Tip

- If on the A/C Service Station the filling direction cannot be set, then remove (close) the hand wheel on the guick-release coupling adapter on the low pressure side.
- Evacuate the refrigerant circuit. Refer to ⇒ "3.4 Refrigerant Circuit, Evacuating", page 92
- Set the specified refrigerant capacities, refrigerant oil to be added and, if necessary, the UV additive at the A/C Service Station .
- Refrigerant. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant, Capaci-
- Refrigerant oil. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data and Refer to ≥ 2.4 Components, Replacing", page 35
- UV additive. Refer to <u>⇒ "2.3 Leaks, Finding", page 28</u>.
- Start the procedure to charge the refrigerant circuit (refrigerant, if necessary refrigerant oil and UV additive) at the A/C Service Station .



After completion of the charging procedure, remove the A/C Service Station from the refrigerant circuit and turn it off. Refer to Refer to ⇒ "3.7 A/C Service Station, Switching off <u>and Disconnecting from Refrigerant Circuit", page 95</u> .

Vehicles with high-voltage system, for which electric activated valves in the refrigerant circuit are not open when de-energized.

Activate the electric activating valves of the refrigerant circuit using the ⇒ Vehicle diagnostic tester.

Tip

For vehicles with high-voltage system and secondary functions of the A/C system, valves may be installed in the refrigerant circuit. To guarantee correct draining, evacuating and filling of the refrigerant circuit, no segments are allowed to be closed off. That is why the valves need to be closed after filling. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .

Continuation for all vehicles

Depending on the completed work procedures, start the A/C system. Refer to Refer to ⇒ "3.6 A/C System, Operating after <u>Charging", page 95</u> .

3.6 A/C System, Operating after Charging

If equipped, pay attention to vehicle-specific important notes. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

The function for starting the A/C system after charging the refrigerant circuit, must be performed under the following circumstances:

- The A/C compressor was replaced and the refrigerant circuit was flushed.
- Refrigerant circuit was flushed.
- The electrical A/C compressor was replaced.

Procedure

- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94
- Open all instrument panel vents and, if present, the vents in the center console.
- Start the A/C compressor via the "Basic setting, compressor of for private or commercial purposes, in part or in whole, is not cut-in" function. Using the ⇒ Vehicle diagnostic tester unorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Start the engine and let the A/C compressor run for at least 5 minutes, while in idle.

A/C Service Station, Switching off and 3.7 Disconnecting from Refrigerant Circuit

Depending on the A/C Service Station used, changes to the work procedure may be needed. Therefor pay attention to the Owner's Manual. Refer to ⇒ Owner's Manual.

Procedure

End the procedures using the A/C Service Station.

CAUTION

Danger of frostbite due to refrigerant coming out under pressure.

Frostbite on the skin and other parts of the body is possible.

- Wear safety gloves.
- Wear protective eyewear.
- If refrigerant leaks out of the refrigerant line for longer than 1 second when loosening the service coupling hand wheel, screw in the hand wheel and replace the faulty valve.
- Extract refrigerant and open the refrigerant circuit immediately.
- If more than 10 minutes have elapsed since evacuating the refrigerant and the refrigerant circuit was not opened, evacuate the refrigerant again. Evaporation can cause pressure to develop in the refrigerant circuit.
- Remove the service coupling hand wheels.
- Remove the quick-release couplings from the vehicle.

Remove the service connection closure caps. s authorised by AUDI AG. AUDI AG does not guarantee or accept any liability 3.8 Refrigerant, Filling in Reservoir to the correctness of information in this document. Copyright by AUDI AG.

Fill the refrigerant into the reservoir of the A/C Service Station . Refer to ⇒ Owner's Manual .

3.9 A/C Service Station, Discharging

For evacuating the A/C Service Station, refer to ⇒ Owner's Manual or contact the manufacturer of the A/C Service Station.

3.10 Electrically-Driven A/C Compressor, Cleaning

Special tools and workshop equipment required

- A/C Service Station
- The refrigerant oil in an electrical A/C compressor cannot be completely removed by pouring it out.
- The refrigerant oil is removed by flushing in flow direction.
- Cleaning is done automatically, following the program of the A/C Service Station . Refer to ⇒ Owner's Manual .

Procedure

- A/C compressor is removed
- Pour out as much refrigerant oil as possible via the refrigerant line connections.

Tip

If refrigerant oil from a new A/C compressor is poured into a clean container and this container is sealed air tight afterward, then it can be used to adjust the refrigerant oil capacity later on.

- Connect the A/C compressor with the A/C service station. Refer to Refer to ⇒ "2.7 Main Wiring Diagram, Electrically-Compressor, Cleaning", page 52.
- Position the A/C compressor so that the high-pressure side output is as low as possible. This will guarantee best possible results of draining the A/C compressor.
- Select program for flushing.



Clean the A/C compressor.

Tip

Depending on version of the A/C Service Station, old oil container holds only approximately 125 cm³ refrigerant oil, in the event a system with a larger quantity of refrigerant oil must be flushed, it may be necessary to drain the old oil container after the first flushing process of one flushing cycle.

After completion of the flushing procedure, check the refrigerant circuit pressure. There must not be any pressure in the A/C compressor (evacuate the refrigerant circuit briefly once more if necessary).

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CAUTION

Danger of frostbite due to refrigerant coming out under pressure.

Frostbite on the skin and other parts of the body is possible.

- Wear safety gloves.
- Wear protective eyewear.
- Evacuate or drain refrigerant and open the refrigerant circuit immediately.
- If more than 10 minutes elapse after extracting or draining the refrigerant and the refrigerant circuit has not been opened, extract or drain the refrigerant again. Pressure develops in the refrigerant circuit due to evaporation.
- Remove the refrigerant line connection from the A/C compressor to the A/C Service Station.
- Perform the adaptation of the amount of refrigerant oil in the refrigerant circuit, depending on the complaint. Refer to Refer to ⇒ "2.4 Components, Replacing", page 35 and ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 00; Technical Data; Refrigerant Oil, Capacities .

3.11 Refrigerant Circuit, Cleaning

Procedure

- Perform preliminary work for flushing the refrigerant circuit. Refer to Refer to ⇒ "2.5 Refrigerant Circuit, Cleaning", page <u>44</u> .
- Check the refrigerant quantity in the A/C Service Station; there must be at least 6 kg (13.23 lbs) refrigerant present. Refer to > Owner's Manual.
- Empty the used oil reservoir of the A/C Service Station . Refer to ⇒ Owner's Manual.
- Connect the supply hose (high pressure side) of A/C Service Station to the low pressure line leading to the A/C compressor (line with larger diameter) using an adapter. Refer to Refer to ⇒ ' "2.8 Adapter for Assembling the Flushing Circuits", page 54.
- Connect the return hose (low pressure or intake side) of the A/C Service Station to the output of refrigerant circuit flushing device.
- Connect the input on the flushing device to the high pressure line leading to the A/C compressor (line with smaller diameter) using an adapter. Refer to Refer to ⇒ "2.8 Adapter for Assembling the Flushing Circuits", page 54
- Main Wiring Diagrams for Various Flushing Circuits. Refer to ⇒ "2.5 Refrigerant Circuit, Cleaning", page 44

- While flushing, contaminants from the refrigerant circuit enter the refrigerant circuit flushing device and the A/C Service Station and are absorbed by the filters and dryers installed there. Depending on the contaminant, these components are to be replaced in shorter intervals according to the Owner's Manual for the A/C Service Station or refrigerant circuit flushing device. Refer to ⇒ Owner's Manual.
- If components such as, for example, an expansion valve are installed, the liquid refrigerant cannot flow through the refrigerant circuit with the required speed. This is why several components must be removed and replaced by adapters. Refer to Refer to ⇒ "2.5 Refrigerant Circuit, Cleaning", page

Perform Flushing Procedure

The process is done automatically, following the program of the A/C Service Station . Refer to ⇒ Owner's Manual .

- Select program for flushing.
- Flush the refrigerant circuit.

Tip

- One flushing cycle (consisting of 4 flushing procedures) has Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability a duration of approximately 1 to 1.5 hours.
- Depending on version of the A/C Service Station, rold oil the correctness of information in this document. Copyright by AUDI AG. container holds only approximately 125 cm³ refrigerant oil, in the event a system with a larger quantity of refrigerant oil must be flushed, it may be necessary to drain the old oil container after the first flushing process of one flushing cycle.
- Monitor the refrigerant which is flowing from the refrigerant circuit back into the A/C Service Station , through the looking glass of the flushing device.
- Only when the refrigerant is flowing clear and absolutely transparent into the A/C Service Station, then the refrigerant circuit is clean.

Tip

- All the refrigerant oil is washed out of the refrigerant circuit during flushing (except for a very small amount in the evaporator, however this can be disregarded).
- If heavily contaminated, it may be necessary to perform the flushing procedure twice (two flushing cycles with four flushing operations each).
- After completion of the flushing procedure, check the sight glasses of the flushing device for contamination. If there is contamination, clean. Refer to ⇒ Owner's Manual . Then repeat the flushing procedure to check (one procedure with a duration of 30 min. is sufficient).
- Check the pressure in the refrigerant circuit. There must not be any pressure in the refrigerant circuit (evacuate the refrigerant circuit briefly once more if necessary).

CAUTION

Danger of frostbite due to refrigerant coming out under pressure.

Frostbite on the skin and other parts of the body is possible.

- Wear safety gloves.
- Wear protective eyewear.
- Evacuate or drain refrigerant and open the refrigerant circuit immediately.
- If more than 10 minutes elapse after extracting or draining the refrigerant and the refrigerant circuit has not been opened, extract or drain the refrigerant again. Pressure develops in the refrigerant circuit due to evaporation.
- Disconnect the A/C Service Station from the refrigerant circuit of the vehicle.
- Depending on the design of the refrigerant circuit, some components must be replaced after flushing. Refer to Refer to ⇒ "2.5 Refrigerant Circuit, Cleaning", page 44 or ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit .
- Perform an adaption of the refrigerant oil amount in the refrigerant circuit, depending on the complaint. Refer to Refer to <u>⇒ "2.4 Components, Replacing", page 35</u> and ⇒ Heating, Prot Ventilation and Air Conditioning, Rep. Gr. '00', Technical Data, Approved Refrigerant Oils and Refrigerant Oil Capaci-
- Charge the refrigerant circuit. Refer to ⇒ "3.5 Refrigerant Circuit, Charging", page 94.
- A/C System, Starting according to guidelines. Refer to ⇒ "3.6 A/C System, Operating after Charging", page 95.
- 3.12 Contaminated Refrigerant, Filling in Recycling Cylinder for Analysis, Processing, or Disposal

⇒ "3.12.1 Recycling Cylinder, Filling with Contaminated Refrigerant using Extraction Unit VAS 581 011", page 99

⇒ "3.12.2 Recycling Cylinder, Filling with Contaminated Refrigerant using Extractor VAS 581 007", page 100

3.12.1 Recycling Cylinder, Filling with Contaminated Refrigerant using Extraction Unit - VAS 581 011-

Special tools and workshop equipment required

Extraction Unit - VAS 581 011-



- A/C Service Station R1234yf VAS 581 003- or another VAS A/C Service Station R1234yf
- Evacuated recycling cylinder for contaminated R1234yf. Commercially available from gas supplier. Recycling cylinders not made of light metal alloy, because chemical reactions with refrigerant components are possible.

Procedure

Vehicles with High-Voltage System

Deactivate the "parking air conditioner". Refer to ⇒ Owner's Manual

Vehicles with high-voltage system, for which electric activated valves in the refrigerant circuit are not open when de-energized.

Open the electric activated valves for the refrigerant circuit for extracting, evacuating and filling. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit and the ⇒ Vehicle diagnostic tester.

Tip

Protected by copyright, Copying for private or commercial purposes, in part or in whole, is not For vehicles with a high-voltage system and secondary func_{ot} any liability tions of the A/G system, valves may be installed in the refriger of AG. ant circuit. To guarantee correct draining, evacuating and filling of the refrigerant circuit, no segments are allowed to be closed off. That is why the valves need to be opened before respective work procedures. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Continuation for all vehicles

- Switch off the ignition.
- Connect the Extraction Unit VAS 581 011- according to the included ⇒ Owner's Manual with the vehicle and the A/C Service Station R1234yf.
- Fill the contaminated refrigerant into the recycling cylinder, using the Extraction Unit - VAS 581 011- . Refer to the ⇒ Owner's Manual .
- Fill out the supplement data sheet for the recycling cylinder with contaminated refrigerant and secure on the recycling cylinder.
- Return the filled recycling cylinder via the supplier, while paying attention to the applicable laws.
- Evacuate the refrigerant circuit with the A/C Service Station for at least one hour. Refer to ⇒ "3.4 Refrigerant Circuit, Evacuating", page 92
- By then evacuating the rest of the contaminated refrigerant, which could still be attached to the refrigerant oil can be removed at an absolute pressure of less than 10 mbar (0.15 psi).

3.12.2 Recycling Cylinder, Filling with Contaminated Refrigerant using Extractor -VAS 581 007-

Special tools and workshop equipment required

- Minimum dimension 10 kg (22.05 lbs) dry ice (as pellets or granulate) - commercially available.
- Evacuated recycling cylinder for contaminated R1234yf, which is suitable for low temperatures (for example with a permitted capacity higher than 3.0 kg (6.61 lbs)). Commercially available from gas supplier. Recycling cylinders not



made of light metal alloy, because chemical reactions with refrigerant components are possible.

- Extractor VAS 581 007- . Refer to the ⇒ Electronic Parts Catalog (ETKA) .
- So that contaminated refrigerant can be filled by itself without corresponding devices in an evacuated recycling cylinder, it must be strongly cooled.
- Dry ice is solid carbon dioxide (CO₂), that at 78 °C (-108.4 °F) goes directly from a solid into a gas.
- The majority of gas, which can be used as a refrigerant, have a very low temperature and only have a low vapor pressure (at -50 °C (-58 °F) smaller than 0.6 bar (8.7 psi) absolute pressure). If in a deeply cooled recycling cylinder which is connected to a refrigerant circuit, the refrigerant becomes a liquid in a cold recycling cylinder and the refrigerant circuit pressure goes under the ambient pressure. Refer to Refer to ⇒ "5.1.2 Refrigerant Vapor Pressure Table", page
- The commercially available recycling cylinders are usually poses, in part or in whole, is not made from common constitution steel. Which is not always quarantee or accept any liability designed for low temperatures (here, up to -78 °C (-108.4) °F)). Therefore, only use suitable recycling cylinders for this procedure and adjust them slowly to ambient temperature (for example by placing the insulated container with the recycling cylinder at a secure and well vented location at which the dry ice can evaporate without creating a hazard).
- Dry ice evaporates at ambient temperature from the insulated container (depending on the ambient conditions approximately 20 to 30 % a day). For this reason only order dry ice when all other necessary tools are present and the procedure can be performed just after receiving the dry ice.

CAUTION

Risk of frostbite or suffocation due to dry ice.

Frostbite of the skin and other body and suffocation as a gas is possible.

- Wear safety gloves.
- Wear protective eyewear.
- Only work with the dry ice in well-ventilated areas.
- Never work near basement staircases or other low-lying areas.



CAUTION

Risk of explosion due to improperly stored dry ice.

When dry ice evaporates the pressure in the container increases. Unsuitable containers can explode.

Transport and store dry ice only in the containers designed for it.

Fill the refrigerant in a supercooled recycling cylinder.

- Remove the recycling cylinder seal and remove the closure cap from the connection.
- Recycling cylinders are usually available from the gas supplier, often sealed and already evacuated.

- Recycling cylinders are clearly labeled as such. They do not have a check valve and thus can be filled, contrary to refrigerant cylinders.
- Connect the A/C Service Station to the recycling cylinder. To do so remove the low pressure service coupling from the A/C Service Station filler hose and connect the filler hose directly with the adapter belonging to the Extractor - VAS 581 007- to the adapter on the recycling cylinder.
- Carefully open the recycling cylinder hand shut-off valve to check the vacuum and check the vacuum in the cylinder.
- Residual pressure in the recycling cylinder less than 50 mbar (0.73 psi) absolute pressure.
- If necessary evacuate the recycling cylinder using the A/C Service Station .
- If the recycling cylinder has an absolute pressure greater than 900 mbar (13.05 psi) either the manual shut-off valve was opened and not closed correctly or the recycling cylinder is leaking. Contact the gas supplier and if necessary change the recycling cylinder.
- If the recycling cylinder has an absolute pressure larger than 100 mbar (1.45 psi) but smaller than 900 mbar (13.05 psi) which can be measured, evacuate the recycling cylinder with a A/C Service Station (residual pressure less than 50 mbar (0.73 psi)). Refer to ⇒ "3.4 Refrigerant Circuit, Evacuating",
- Close the recycling cylinder hand shut-off valves.

Vehicles with High-Voltage System

Deactivate the "parking air conditioner". Refer to ⇒ Owner's Manual.

Vehicles with high-voltage system, for which electric activated valves in the refrigerant circuit are not open when de-energized.

Open the electric activated valves for the refrigerant circuit for extracting, evacuating and filling. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit and the ⇒ Vehicle diagnostic tester.

Tip

For vehicles with a high-voltage system and secondary functions of the A/C system, valves may be installed in the refrigerant circuit. To guarantee correct draining, evacuating and filling of the refrigerant circuit, no segments are allowed to be closed off. That is why the valves need to be opened before respective work procedures. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Refrigerant Circuit.

Continuation for all vehicles

- Switch off the ignition.
- Make sure there is sufficient ventilation at the work space. If available, turn on additional workshop ventilation systems.

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CAUTION

There is a risk of explosion due to overfilling refrigerant cylinders.

Refrigerant can expand and the refrigerant cylinder can explode due to overfilling.

- Use a refrigerant cylinder with a safety valve.
- Never exceed the permitted capacity of the refrigerant cyl-



CAUTION

Chemical reaction due to contaminated refrigerant. When mixing gases of unknown composition different chemical reactions can occur.

Injury is possible.

Never mix refrigerant of different origins.



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Refrigerant R1234yf Servicing - Edition 07.2024

- Connect the service coupling for refrigerant R1234yf -5- to the filler hose -4-.
- Connect the filler hose -4- with the connection piece -3- (and seal -2-) on the recycling cylinder -1-.
- Position the spacer -6- in the insulated container -7-.
- Cover the bottom of the insulated container -7- with dry ice.
- Position the recycling cylinder -1- in the insulated container -7-.
- Fill the remaining dry ice in the insulated container -7-.
- Cool the recycling cylinder -1- with dry ice (approximately 15 minutes).
- Connect the recycling cylinder -1- via the service coupling -5- to the vehicle refrigerant circuit.
- Open the recycling cylinder hand shut-off valve -1-.
- Recycling cylinders are designed for international use, and this means that "O" on the hand wheel means "open" (for cylinder vale open).
- Connect the pressure gauge to the refrigerant circuit (or the use the A/C Service Station pressure gauge) and check the refrigerant circuit pressure.
- Carefully open the service coupling -5- on the filler hose to the recycling cylinder and let the refrigerant flow slowly in the recycling cylinder -1-.
- Wait until the refrigerant in the recycling cylinder -1- is liquid (pay attention to the pressure indicator on the connected pressure gauge).
- When emptying a refrigerant circuit a pressure gauge or the pressure gauge of the A/C Service Station can be used.
- If the displayed pressure after approximately 60 minutes is smaller than 0.3 bar (4.35 psi) absolute pressure it can be assumed that the refrigerant in the recycling cylinder is liquid.
- The complete evaporation of the contaminated refrigerant from the refrigerant circuit takes a certain period of time. after 60 min it can be assumed that the entire refrigerant is evaporated.
- Close the service coupling -5- and the recycling cylinder hand shut-off valve -1-.

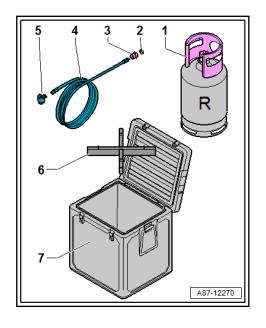
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Remove the filler hose -4- and connection beginning and by ABDIAG AUDI AG does not guarantee or accept any liability the second of the second connection beginning to the precision by the second of t the recycling cylinder -1- and close the recycling cylinder connection with the closure cap.

WARNING

Risk of bursting of the recycling cylinder due to repeated impacts or thrusts when in frozen state.

- Prevent impacts and thrusts when frozen.
- Recycling cylinders which were subject to repeated impacts and thrusts when frozen must not be used again.
- The supplier of the recycling cylinder must be informed and further action must be coordinated with the supplier.
- Place the insulated container -7- with the recycling cylinder -1- and the dry ice in a secured, well ventilated area outside of the building.





- Open the cover of the insulated container -7- or remove and let the dry ice completely evaporate.
- Remove the recycling cylinder -1- from the insulated contain-
- Evacuate the refrigerant circuit with the A/C Service Station for at least one hour. Refer to ⇒ "3.4 Refrigerant Circuit," Evacuating", page 92
- By then evacuating the rest of the contaminated refrigerant, which could still be attached to the refrigerant oil can be removed at an absolute pressure of less than 10 mbar (0.15 psi).
- Fill out the supplement data sheet for the recycling cylinder with contaminated refrigerant and secure on the recycling cylinder.
- Return the filled recycling cylinder via the supplier, while paying attention to the applicable laws.



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Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described
 in this manual, we suggest you leave such repairs to an authorized Audi retailer or other
 qualified shop. We especially urge you to consult an authorized Audi retailer before beginning
 repairs on any vehicle that may still be covered wholly or in part by any of the extensive
 warranties issued by Audi.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system
 or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an
 approved fire extinguisher handy.
- Audi is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Audi retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be
 necessary to reestablish Transmission Control Module (TCM) basic settings using the Audi
 Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the
 purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may
 crumble under continuous load. Never work under a vehicle that is supported solely by a jack.
 Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of
 injury to yourself and others if you are tired, upset or have taken medicine or any other
 substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace
 when you work near machine tools or running engines. If your hair, clothing, or jewelry were to
 get caught in the machinery, severe injury could result.

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Cautions & Warnings

- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are
 designed to be used only once and are unreliable and may fail if used a second time. This
 includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the
 recommendations in this manual replace these fasteners with new parts where indicated,
 and any other time it is deemed necessary by inspection.
- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand.
 Read all the instructions thoroughly, do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Audi specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these
 tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten
 fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping
 hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the
 proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a
 stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame.
 Excessive heat will increase system pressure and may cause the system to burst.

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Cautions & Warnings

- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Audi Service technicians should test, disassemble or service the airbag system.
- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not
 exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute
 before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only
 be tested by trained Audi Service technicians using the Audi Factory Approved Scan Tool (ST)
 or an approved equivalent. The airbag unit must never be electrically tested while it is not
 installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area, inflate and detlate the tire at least four times before breaking the bead from the rim!! Completely remove the tire from the rim beforey AUDI AG. attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.